IEC TS 62257-200

Edition 1.0 2026-03

TECHNICAL SPECIFICATION

Renewable energy off-grid systems -
Part 200: System selection and design

ICS 27.160

ISBN 978-2-8327-1117-0

IEC TS 62257-200:2026-03(en)

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Renewable energy off-grid systems - Part 200: System selection and design

FOREWORD

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IEC TS 62257-200 has been prepared by IEC technical committee 82. Solar photovoltaic energy systems. It is a Technical Specification.

This first edition cancels and replaces the second edition of IEC 62257-4 published in 2015. It constitutes a technical revision.

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

a) The previous edition focussed on isolated electrification systems provided through projects only. This version includes isolated electrification systems that could be supplied directly to a user by a system supplier.
b) Information that was previously included in IEC TS 62257-2 that was directly relevant to system design has been moved to be included in this version.

c) The operation of numerous micropower plants typologies has changed due to changes in features and functions of inverters. The typologies of the various powerplants have been updated to reflect these changes.

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

Draft	Report on voting
82/2505/DTS	82/2573/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 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 Sustainability Development Goals (https://sdgs.un.org/goals), depending on the application.

Several strategies can be adopted to implement electrification and improve access to electricity in rural and urban settings, including the ability for connection to a national or regional electricity grid. The IEC 62257 series applies to cases where the utility grid is too far away, the individual demand centres are too small to make grid access economical, off-grid solutions provide an economical option, and where autonomous power systems can be used to supply these services.

These technical specifications are used to:

a) choose the right solution for the right place with the optimal technology,

b) design, purchase and install the product(s) or system to optimal compliancy,

c) operate and maintain the system.

The IEC 62257 technical specifications focus on enabling access to electricity by concentrating on, but not being specific to, developing countries. This series is not to 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. They promote the use of renewable energies, but at this time they do not deal with clean-energy mechanisms development (CO_2 emissions, carbon credit, etc.). The series does allow for other types of energy, such as diesel generators, to be included as part of a hybrid renewable energy off-grid system.

This consistent set of documents can be considered as a whole, with different parts focusing on specific aspects of renewable energy off-grid systems. However, several parts are intended to be read as stand-alone documents depending on their intended application. IEC TS 62257-100 provides an overview of the various topics covered by this series. Additionally, the content and scopes of individual documents, available at the website webstore.iec.ch, provide potential users with the intended application for each document. For further information on planned documents to be published under the new IEC 62257 numbering scheme, IEC TC 82 committee members can refer to the annex in the JWG1 Program of Work circulated after each JWG1 meeting, or to the Planned Work Programme on the www.iec.ch TC 82 website.

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.