TECHNICAL SPECIFICATION

IEC TS 62257-3

First edition
2004-11

Recommendations for small renewable energy and hybrid systems for rural electrification –

Part 3:
Project development and management

Reference number
IEC/TS 62257-3:2004(E)

Publication numbering

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International Electrotechnical Commission
Международная Электротехническая Комиссия

PRICE CODE X

For price, see current catalogue

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

RECOMMENDATIONS FOR SMALL RENEWABLE ENERGY AND HYBRID SYSTEMS FOR RURAL ELECTRIFICATION –

Part 3: Project development and management

FOREWORD

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- the required support cannot be obtained for the publication of an International Standard, despite repeated efforts, or
- the subject is still under technical development or where, for any other reason, there is the future but no immediate possibility of an agreement on an International Standard.

Technical specifications are subject to review within three years of publication to decide whether they can be transformed into International Standards.

IEC 62257-3, which is a technical specification, has been prepared by IEC technical committee 82: Solar photovoltaic energy systems.

This technical specification is based on IEC/PAS 62111(1999); it cancels and replaces the relevant parts of IEC/PAS 62111.

This technical specification is to be used in conjunction with

IEC 62257-1: *Recommendations for small renewable energy and hybrid systems for rural electrification – Part 1: General introduction to rural electrification*

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

It is also to be used with future parts of this series as and when they are published.

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

Enquiry draft	Report on voting
82/337/DTS	82/359/RVC

Full information on the voting for the approval of this technical specification 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.

The committee has decided that the contents of this publication will remain unchanged until the maintenance result date indicated on the IEC web site under "http://webstore.iec.ch" in the data related to the specific publication. At this date, the publication will be

- reconfirmed;
- withdrawn;
- replaced by a revised edition, or
- amended.

A bilingual version of this publication may be issued at a later date.

INTRODUCTION

The IEC 62257 series of documents intends to provide to the different players involved in rural electrification projects (such as project implementers, project contractors, project supervisors, installers, etc.) documents for the setting-up of renewable energy and hybrid systems with a.c. voltage below 500 V, d.c. voltage below 50 V and power below 50 kVA.

These documents are recommendations

– to choose the right system for the right place;

– to design the system;

– to operate and maintain the system.

These documents are focused only on rural electrification concentrating on, but not specific to, developing countries. They should not be considered as all-inclusive to rural electrification. The documents try to promote the use of renewable energies in rural electrification; they do not deal with clean mechanism developments at this time (CO_2 emission, carbon credit, etc.). Further developments in this field could be introduced in future steps.

This consistent set of documents is best considered as a whole with different parts corresponding to items for safety, sustainability of systems and at the lowest life-cycle cost as possible. One of the main objectives is to provide the minimum sufficient requirements, relevant to the field of application, that is, small renewable energy and hybrid off-grid systems.

The purpose of this part of IEC 62257 is to propose a framework for project development and management and includes recommended information that should be taken into consideration during all the steps of the electrification project.

RECOMMENDATIONS FOR SMALL RENEWABLE ENERGY AND HYBRID SYSTEMS FOR RURAL ELECTRIFICATION –

Part 3: Project development and management

1 Scope

This part of IEC 62257 provides information on the responsibilities involved in the implementation of rural power systems. In Clause 5, this technical specification presents contractual relationships to be built between the different participants to a project. Throughout the project, responsibilities are to be clearly defined and contractual commitments controlled. Clause 6 provides relevant tests to be applied to small renewable energy and hybrid electrification systems. Clause 7 provides proposed quality assurance principles to be implemented. In Clause 8, requirements are proposed for recycling and protection of the environment. In Annex A of this technical specification, further technical considerations for contractual liabilities are provided.

2 Normative references

The following referenced documents are indispensable for the application 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 60060-2: *High-voltage test techniques – Part 2: Measuring systems*

IEC 60068-1: *Environmental testing – Part 1: General and guidance*

IEC 60068-2-1: *Environmental testing – Part 2: Tests – Tests A: Cold*

IEC 60068-2-2: *Environmental testing – Part 2: Tests – Tests B: Dry heat*

IEC 60068-2-5: *Environmental testing – Part 2: Tests – Test Sa: Simulated solar radiation at ground level*

IEC 60068-2-6: *Environmental testing – Part 2: Tests – Test Fc: Vibration (sinusoidal)*

IEC 60068-2-10: *Environmental testing – Part 2: Tests – Test J and guidance: Mould growth*

IEC 60068-2-27: *Environmental testing – Part 2: Tests – Test Ea and guidance: Shock*

IEC 60068-2-30: *Environmental testing – Part 2: Tests – Test Db and guidance: Damp heat, cyclic (12 + 12-hour cycle)*

IEC 60068-2-32: *Environmental testing – Part 2: Tests – Test Ed: Free fall*

IEC 60068-2-52: *Environmental testing – Part 2: Tests – Test Kb: Salt mist, cyclic (sodium chloride solution)*

IEC 60068-2-75: *Environmental testing – Part 2-75: Tests – Test Eh: Hammer tests*

IEC 60076-10: *Power transformers – Part 10: Determination of sound levels*

IEC 60364-6-61: *Electrical installations of buildings – Part 6-61: Verification – Initial verification*

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

IEC 60695-2-10: *Fire hazard testing – Part 2-10: Glowing/hot-wire based test methods – Glow-wire apparatus and common test procedure*

IEC 60695-2-12: *Fire hazard testing – Part 2-12: Glowing/hot-wire based test methods – Glow-wire flammability test method for materials*

IEC 60721-1: *Classification of environmental conditions – Part 1: Environmental parameters and their severities*

IEC 60721-2-1: *Classification of environmental conditions – Part 2-1: Environmental conditions appearing in nature – Temperature and humidity*

IEC 60721-3-1: *Classification of environmental conditions – Part 3: Classification of groups of environmental parameters and their severities – Section 1: Storage*

IEC 60721-3-2: *Classification of environmental conditions – Part 3: Classification of groups of environmental parameters and their severities – Section 2: Transportation*

IEC 60721-3-3: *Classification of environmental conditions – Part 3: Classification of groups of environmental parameters and their severities – Section 3: Stationary use at weather-protected locations*

IEC 60721-3-4: *Classification of environmental conditions – Part 3: Classification of groups of environmental parameters and their severities – Section 4: Stationary use at non-weatherprotected locations*

IEC 61000-2-2: *Electromagnetic compatibility (EMC) – Part 2-2: Environment – Compatibility levels for low-frequency conducted disturbances and signalling in public low-voltage power supply systems*

IEC 61000-3-2: *Electromagnetic compatibility (EMC) – Part 3-2: Limits – Limits for harmonic current emissions (equipment input current ≤16 A per phase)*

IEC 61000-3-5: *Electromagnetic compatibility (EMC) – Part 3: Limits – Section 5: Limitation of voltage fluctuations and flicker in low-voltage power supply systems for equipment with rated current greater than 16A*

IEC 61000-4-1: *Electromagnetic compatibility (EMC) – Part 4-1: Testing and measurement techniques – Overview of IEC 61000-4 series*

IEC 61000-4-2: *Electromagnetic compatibility – Part 4-2: Testing and measuring techniques – Electrostatic discharge immunity test*.

IEC 61000-4-3: *Electromagnetic compatibility (EMC) – Part 4-3: Testing and measurement techniques – Radiated, radio-frequency, electromagnetic field immunity test*

IEC 61000-4-4: *Electromagnetic compatibility (EMC) – Part 4-4: Testing and measurement techniques – Electrical fast transient/burst immunity test*

IEC 61000-4-5: *Electromagnetic compatibility (EMC) – Part 4-5: Testing and measurement techniques – Surge immunity test*

IEC 61000-4-11: *Electromagnetic compatibility (EMC) – Part 4-11: Testing and measurement techniques – Voltage dips, short interruptions and voltage variations immunity tests*

IEC 61000-6-3: *Electromagnetic compatibility (EMC) – Part 6: Generic standards – Section 3: Emission standard for residential, commercial and light-industrial environments*

IEC 61140: *Protection against electric shock – Common aspects for installation and equipment*

IEC 61180-1, *High-voltage test techniques for low-voltage equipment – Part 1: Definitions, test and procedure requirements*

IEC 62257-1, *Recommendations for small renewable energy and hybrid systems for rural electrification – Part 1: General introduction to rural electrification*

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

IEC 62257-4, *Recommendations for small renewable energy and hybrid systems for rural electrification – Part 4: System selection and design* [1]

IEC 62257-5, *Recommendations for small renewable energy and hybrid systems for rural electrification – Part 5: Safety rules* [1]

IEC 62257-6, *Recommendations for small renewable energy and hybrid systems for rural electrification – Part 6: Acceptance, operation, maintenance and replacement* [1]

IEC 62257-7, *Recommendations for small renewable energy and hybrid systems for rural electrification – Part 7: Technical specifications: generators* [1]

IEC 62257-8, *Recommendations for small renewable energy and hybrid systems for rural electrification – Part 8: Technical specifications: batteries and converters* [1]

IEC 62257-9, *Recommendations for small renewable energy and hybrid systems for rural electrification – Part 9: Technical specifications: integrated systems* [1]

IEC 62257-10, *Recommendations for small renewable energy and hybrid systems for rural electrification – Part 10: Technical specifications: energy manager* [1]

IEC 62257-11, *Recommendations for small renewable energy and hybrid systems for rural electrification – Part 11: Technical specifications: considerations for grid connection* [1]

IEC 62257-12, *Recommendations for small renewable energy and hybrid systems for rural electrification – Part 12: Other topics* [1]

IEC 62262: *Degrees of protection provided by enclosures for electrical equipment against external mechanical impacts (IK code)*

CISPR 22:*Information technology equipment – Radio disturbance characteristics – Limits and methods of measurement*

ISO 14000 (all parts), *Environmental management systems*

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[1] Under consideration.