SLOVENSKI STANDARD
SIST-TS IEC/TS 62257-9-3:2008

01-november-2008

Priporočila za sisteme malih obnovljivih virov energije in hibridne sisteme za elektrifikacijo podeželja - 9-3. del: integrirani sistem - Uporabniški vmesnik

Recommendations for small renewable energy and hybrid systems for rural electrification - Part 9-3: Integrated system - User interface

Ta slovenski standard je istoveten z: IEC/TS 62257-9-3

ICS:

27.190	Biološki viri in drugi alternativni viri energije	Biological sources and alternative sources of energy

SIST-TS IEC/TS 62257-9-3:2008 **en**

TECHNICAL SPECIFICATION IEC TS 62257-9-3

First edition
2006-10

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

Part 9-3: Integrated system – User interface

International Electrotechnical Commission, 3, rue de Varembé, PO Box 131, CH-1211 Geneva 20, Switzerland
Telephone: +41 22 919 02 11 Telefax: +41 22 919 03 00 E-mail: inmail@iec.ch Web: www.iec.ch

Commission Electrotechnique Internationale
International Electrotechnical Commission
Международная Электротехническая Комиссия

PRICE CODE M

For price, see current catalogue

CONTENTS

FOREWORD 3
INTRODUCTION 5

1 Scope 6
2 Normative reference 6
3 Terms and definitions 7
4 Electrical characteristics 9
4.1 Equipment 9
4.2 System voltages 9
5 Functional description 9
6 Design and erection 10
6.1 System earthing 10
6.2 Implementation of interface functions 10
6.3 Insulation requirements 11
6.4 Selection of electrical equipment 11
6.5 Housing 11
6.6 Protection against fraudulent use 12
7 Information to be given and marking 12
8 Verification and acceptance 12
8.1 General 12
8.2 Verification by inspection 12
8.3 Commissioning tests 13

Figure 1 – General configuration of an electrification system 6
Figure 2 – Interface for user installations supplied from a a.c. or a d.c. source 9
Figure 3 – Interface for user installations supplied locally from a.c. or d.c. sources (not from a microgrid) 10

Table 1 – Functions ensured by various types of user interfaces 9

INTERNATIONAL ELECTROTECHNICAL COMMISSION

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

Part 9-3: Integrated system – User interface

FOREWORD

1) The International Electrotechnical Commission (IEC) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of IEC is to promote international co-operation on all questions concerning standardization in the electrical and electronic fields. To this end and in addition to other activities, IEC publishes International Standards, Technical Specifications, Technical Reports, Publicly Available Specifications (PAS) and Guides (hereafter referred to as "IEC Publication(s)"). Their preparation is entrusted to technical committees; any IEC National Committee interested in the subject dealt with may participate in this preparatory work. International, governmental and non-governmental organizations liaising with the IEC also participate in this preparation. IEC collaborates closely with the International Organization for Standardization (ISO) in accordance with conditions determined by agreement between the two organizations.
2) The formal decisions or agreements of IEC on technical matters express, as nearly as possible, an international consensus of opinion on the relevant subjects since each technical committee has representation from all interested IEC National Committees.
3) IEC Publications have the form of recommendations for international use and are accepted by IEC National Committees in that sense. While all reasonable efforts are made to ensure that the technical content of IEC Publications is accurate, IEC cannot be held responsible for the way in which they are used or for any misinterpretation by any end user.
4) In order to promote international uniformity, IEC National Committees undertake to apply IEC Publications transparently to the maximum extent possible in their national and regional publications. Any divergence between any IEC Publication and the corresponding national or regional publication shall be clearly indicated in the latter.
5) IEC provides no marking procedure to indicate its approval and cannot be rendered responsible for any equipment declared to be in conformity with an IEC Publication.
6) All users should ensure that they have the latest edition of this publication.
7) No liability shall attach to IEC or its directors, employees, servants or agents including individual experts and members of its technical committees and IEC National Committees for any personal injury, property damage or other damage of any nature whatsoever, whether direct or indirect, or for costs (including legal fees) and expenses arising out of the publication, use of, or reliance upon, this IEC Publication or any other IEC Publications.
8) Attention is drawn to the Normative references cited in this publication. Use of the referenced publications is indispensable for the correct application of this publication.
9) Attention is drawn to the possibility that some of the elements of this IEC Publication may be the subject of patent rights. IEC shall not be held responsible for identifying any or all such patent rights.

The main task of IEC technical committees is to prepare International Standards. In exceptional circumstances, a technical committee may propose the publication of a technical specification when

- 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 62257-9-3, which is a technical specification, has been prepared by IEC technical committee 82: Solar photovoltaic energy systems.

This part of IEC 62257-9 is based on IEC/PAS 62111 (1999); it cancels and replaces the relevant parts of IEC/PAS 62111.

This part of IEC 62257-9 is to be used in conjunction with the IEC 62257 series.

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

Enquiry draft	Report on voting
82/413/DTS	82/440/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.

A list of all parts of the IEC 62257 series, under the general title *Recommendations for small renewable energy and hybrid systems for rural electrification*, can be found on the IEC website.

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

- transformed into an international standard;
- 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 intends to provide to 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. nominal voltage below 500 V, d.c. nominal voltage below 750 V and nominal power below 100 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 mechanisms 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.

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

Part 9-3: Integrated system – User interface

1 Scope

The purpose of this part of IEC 62257 is to specify the general requirements for the design and the implementation of the interface equipment within the user's installation which connects to a microgrid or the generating part of a standalone system.

This interface is a part of the user's installation as shown in Figure 1.

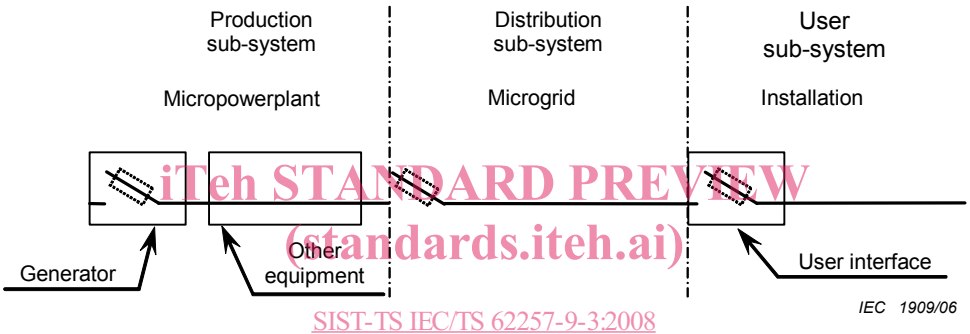

Figure 1 – General configuration of an electrification system

This part of IEC 62257-9 applies to a simplified user's interfaces (distribution board) in electrical installations with maximum power of 500 VA in Decentralized Rural Electrification Systems (DRES).

NOTE For installations above 500 VA in decentralized electrification systems, IEC 62257-5 applies.

This part of IEC 62257-9 applies to an interface equipment within the user's installation and which connects the user's installation to:

- 230 V a.c. or 120 V a.c. microgrid,
- the generating part – a.c. or d.c. - of a stand-alone installation.

This equipment provides protection, isolation, and distribution functions.

2 Normative reference

The following referenced documents are essential 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 60364 (all parts), *Electrical installations of buildings*

IEC 60439-3:1990, *Low-voltage switchgear and control gear assemblies – Part 3: Particular requirements for low-voltage switchgear and control gear assemblies intended to be installed in places where unskilled persons have access for their use – Distribution boards*
Amendment 1:1993
Amendment 2:2001

IEC 62257 (all parts), *Recommendations for small renewable energy and hybrid systems for rural electrification*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

3.1
carrier (messenger)
wire or rope, the primary function of which is to support the cable in aerial installations, which may be separate from or integral with the cable it supports

3.2
block
part of a line between two consecutive stoppage poles

3.3
earth
conductive mass of the earth, whose electric potential at any point is conventionally taken as equal to zero

3.4
equipotential bonding
provision of electric connections between conductive parts, intended to achieve equipotentiality

NOTE The role of the equipotential bonding is to decrease the difference in potential that can exists between two exposed-conductive parts of an installation.

3.5
microgrid
subsystem of a DRES intended for power distribution of which the capacity does not exceed 100 kVA

NOTE The prefix «micro» is intended to express the low level of transmitting capacity.

3.6
micropowerplant
subsystem of a DRES for power generation up to 100 kVA

NOTE The prefix «micro» is intended to express the low power level generated (from a few kVA to a few tens of kVA).

3.7
protective conductor
(identification: PE)
conductor provided for purposes of safety, for example protection against electric shock

[IEV 195-02-09]