

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

Part 9-4: Integrated system — User installation

ICS 27.160; 27.180

National foreword

This Draft for Development was published by BSI. It is the UK implementation of IEC/TS 62257-9-4:2006.

This publication is not to be regarded as a British Standard.

It is being issued in the Draft for Development series of publications and is of a provisional nature. It should be applied on this provisional basis, so that information and experience of its practical application can be obtained.

Comments arising from the use of this Draft for Development are requested so that UK experience can be reported to the international organization responsible for its conversion to an international standard. A review of this publication will be initiated not later than 3 years after its publication by the international organization so that a decision can be taken on its status. Notification of the start of the review period will be made in an announcement in the appropriate issue of *Update Standards*.

According to the replies received by the end of the review period, the responsible BSI Committee will decide whether to support the conversion into an international Standard, to extend the life of the Technical Specification or to withdraw it. Comments should be sent to the Secretary of the responsible BSI Technical Committee at British Standards House, 389 Chiswick High Road, London W4 4AL.

The UK participation in its preparation was entrusted to Technical Committee GEL/82, Solar photovoltaic energy systems.

A list of organizations represented on GEL/82 can be obtained on request to its secretary.

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

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

**Part 9-4:
Integrated system –
User installation**



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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 (CO₂ 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 9-4: Integrated system – User installation

1 Scope

The purpose of this part of IEC 62257 is to specify the general requirements for the design and the implementation of a user's installation.

This part of IEC 62257-9 applies to single phase user's 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 is applicable to installations supplied by a microgrid (120 V a.c. or 230 V a.c.) and to installations encompassing their own single-unit micropowerplant (120 V a.c. or 230 V a.c. or 12 V d.c. or 24 V d.c.)

The part of IEC 62257-9 applies neither to the electric power production and distribution installations described in the sections concerning microplants and microgrids, nor to user electrical equipment. It details the rules governing the design and construction of consumer's electrical installations for the purpose of ensuring the safety of persons and property, and satisfactory operation in accordance with the purpose for which the installations are designed.

It applies to new installations and modifications of existing installations.

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 60269 (all parts), *Low-voltage fuses*

IEC 60364-5-52, *Electrical installations of buildings – Part 5-52: Selection and erection of electrical equipment – Wiring systems*

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

protective conductor (identification: PE)

conductor provided for purposes of safety, for example protection against electric shock

NOTE In an electrical installation, the conductor identified PE is normally also considered as protective earthing conductor.

[IEV 195-02-09]

3.2

PEN conductor

conductor combining the functions of a protective earthing conductor and a neutral conductor
[IEV 195-02-12]

3.3

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 exist between two exposed-conductive parts of an installation.

3.4

surge arrester

device designed to protect the electrical apparatus from high transient overvoltages and to limit the duration and frequently, the amplitude of the follow-on current

3.5

supply point

contractual limit between the grid and the user's installation

NOTE In rural electrification systems, it is generally located on the input terminals (microgrid side) of the user's interface.

3.6

Surge Protective Device

SPD

device that is intended to protect the electrical apparatus from transient overvoltages and divert surge current; it contains at least one non linear component

4 General considerations

4.1 General

User installations shall be designed to ensure protection of persons, animal and equipment in compliance with IEC 62257- 5.

Specific requirements for generators associated with stand-alone user installations are provided in the relevant part of the IEC 62257-7 series.

4.2 Installation limits

Installation limits are illustrated in following Figure 1.

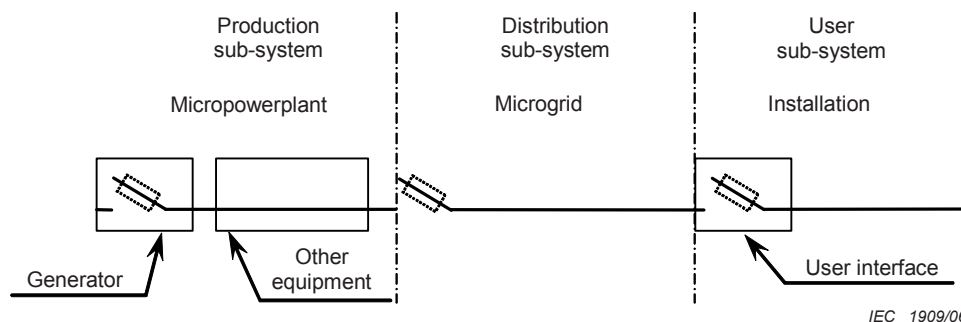


Figure 1 – Installation limits

4.3 User interface

See IEC 62257-9-3.