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SANS 959-2-3:2016

Edition 1.1
Amdt 1

SOUTH AFRICAN NATIONAL STANDARD

Photovoltaic systems for use in individual homes, schools and clinics

Part 2-3: Test procedures for main components — Regulators, charge controllers and maximum power point trackers (MPPTs)

WARNING
This document references other documents normatively.

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Table of changes

Change No.	Date	Scope
Amdt 1	2016	Amended to change the designation "SANS 959-2-3/NRS 052-2-3" to read "SANS 959-2-3", and to update referenced standards.

Foreword

This South African standard was approved by National Committee SABS/TC 069, *Power electronics and alternative energy conversion*, in accordance with procedures of the SABS Standards Division, in compliance with annex 3 of the WTO/TBT agreement.

This document was approved for publication in November 2016.

This document supersedes SANS 959-2-3:2012 (edition 1).

A vertical line in the margin shows where the text has been technically modified by amendment No. 1.

SANS 959 consists of the following parts and sections, under the general title *Photovoltaic systems for use in individual homes, schools and clinics:*

Part 1: Standardized requirements applicable to off-grid individual homes, schools and clinics.

Part 2-1: Test procedures for main components – Photovoltaic modules.

Part 2-2: Test procedures for main components – Batteries.

Part 2-3: Test procedures for main components – Regulators, charge controllers and maximum power point trackers (MPPTs).

Part 2-4: Test procedures for main components – Inverters.

Part 2-5: Test procedures for main components – Luminaires.

Part 3: Standardized requirements applicable to the installation and maintenance of off-grid systems in individual homes, schools and clinics.

Annex A is for information only.

Compliance with this document cannot confer immunity from legal obligations.

Introduction

This section of SANS 959-2 has been developed to standardize the testing of regulators, charge controllers and MPPTs to be utilized in the solar home systems programme and the school and clinic electrification programmes as envisaged in SANS 959-1. **Amdt 1**

The tests are intended to verify compliance with the requirements in 4.5 in SANS 959-1:2016. Although the tests are primarily intended for application to regulators used in systems of nominal d.c. voltage 12 V with maximum currents of up to 15 A, they can be adapted to test and characterize regulators in general. In general, the requirements with regard to, for example, electrical parameters, protection features, charge regulation, set-points, emission limits, mechanical and inspection requirements, that are given in SANS 959-1 and in accordance with which the regulators are tested, will need to be revised and appropriately amended. Where regulators are intended for use in systems of higher nominal d.c. voltages, for example, 24 V, 36 V and 48 V, applied voltages, charge and discharge currents supplied during testing should be proportionately factored to correspond, in their order of magnitude, to those of the applicable system. **Amdt 1**

This section of SANS 959-2 was primarily intended for regulators that measure and operate using battery voltage set-points. Procedures for new regulator technologies, such as regulators that measure and operate at set-points of input and discharge ampere-hours, will need to be developed and incorporated into this section of SANS 959-2 as and when they are published. There is no intention to exclude the new technologies. **Amdt 1**

NOTE Maximum power point tracker (MPPT) regulators are now covered in this section of SANS 959-2. New regulator technologies may be considered on the basis of agreements between the supplier and the purchaser. It is intended that, on publication of this section of SANS 959-2, regulators that operate on the criteria of charged or discharged ampere-hours will be regarded as complementary rather than exclusive. **Amdt 1**

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1 Scope

1.1 This section of SANS 959-2 specifies test procedures for regulators for use in photovoltaic systems of nominal d.c. voltage 12 V and maximum currents of up to 15 A. The test procedures may be adapted for regulators used on larger systems and voltages of 24 V, 36 V and 48 V (as envisaged for school and clinic systems in SANS 959-1) and for the testing of regulators in general. **Amdt 1**

1.2 The objective of the test procedures in this section of SANS 959-2 is to verify compliance with the requirements in 4.5 of SANS 959-1:2016. **Amdt 1**

2 Normative references

The following documents contain provisions which, through reference in this text, constitute provisions of this section of SANS 959-2. All documents are subject to revision and, since any reference to a document is deemed to be a reference to the latest edition of that document, parties to agreements based on this specification are encouraged to take steps to ensure the use of the most recent editions of the documents listed below. Information on currently valid national and international standards can be obtained from the SABS Standards Division. **Amdt 1**

NOTE In the case of conflict between the following standards and specifications and this section of SANS 959-2, the requirements in this section of SANS 959-2 take precedence. **Amdt 1**

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

IEC 62093, *Balance-of-system components for photovoltaic systems – Design qualification natural environments.*

SANS 222/CISPR 22, *Information technology equipment – Radio disturbance characteristics – Limits and methods of measurement.*

SANS 959-1:2016, *Photovoltaic systems for use in individual homes, schools and clinics – Part 1: Standardized requirements applicable to off-grid individual homes, schools and clinics.* **Amdt 1**