

საქართველოს სტანდარტი

მაღალი ძაბვის გამოცდის მეთოდები - ნაწილი 3: ადგილზე გამოცდის ზოგადი
განსაზღვრებები და მოთხოვნები (იეკ 60060-3:2006)

საქართველოს სტანდარტებისა და მეტროლოგიის
ეროვნული სააგენტო
თბილისი

საინფორმაციო მონაცემები

1 დამტკიცებულია და შემოღებულია სამოქმედოდ საქართველოს სტანდარტებისა და მეტროლოგიის ეროვნული სააგენტოს 2017 წლის 15 მაისის № 34 და 2017 წლის 31 იანვრის № 3 განკარგულებებით

2 მიღებულია თავფურცლის თარგმნის მეთოდით სტანდარტიზაციის ევროპული კომიტეტის სტანდარტი ენ 60060-3:2006 „ მაღალი ძაბვის გამოცდის მეთოდები - ნაწილი 3: ადგილზე გამოცდის ზოგადი განსაზღვრებები და მოთხოვნები (იეკ 60060-3:2006)“

3 პირველად

4 რეგისტრირებულია საქართველოს სტანდარტებისა და მეტროლოგიის ეროვნული სააგენტოს რეესტრში: 2017 წლის 15 მაისი №268-1.3-011330

აკრძალულია ამ სტანდარტის გადაცემა მესამე პირებისათვის ან/და მისი სხვა ფორმით გავრცელება

საინფორმაციო ნაწილი. სრული ტექსტის სანახავად შეიძინეთ სტანდარტი.

High voltage test techniques
Part 3: Definitions and requirements for on-site tests
(IEC 60060-3:2006)

Techniques des essais à haute tension
Partie 3: Définitions et prescriptions
pour des essais sur site
(CEI 60060-3:2006)

Hochspannungs-Prüftechnik
Teil 3: Begriffe und Anforderungen
für Vor-Ort-Prüfungen
(IEC 60060-3:2006)

This European Standard was approved by CENELEC on 2006-02-01. CENELEC members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration.

Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Central Secretariat or to any CENELEC member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CENELEC member into its own language and notified to the Central Secretariat has the same status as the official versions.

CENELEC members are the national electrotechnical committees of Austria, Belgium, Cyprus, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and the United Kingdom.

CENELEC

European Committee for Electrotechnical Standardization
Comité Européen de Normalisation Electrotechnique
Europäisches Komitee für Elektrotechnische Normung

Central Secretariat: rue de Stassart 35, B - 1050 Brussels

Foreword

The text of document 42/203/FDIS, future edition 1 of IEC 60060-3, prepared by IEC TC 42, High-voltage testing techniques, was submitted to the IEC-CENELEC parallel vote and was approved by CENELEC as EN 60060-3 on 2006-02-01.

The following dates were fixed:

- latest date by which the EN has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 2006-11-01
- latest date by which the national standards conflicting with the EN have to be withdrawn (dow) 2009-02-01

This European Standard makes reference to International Standards. Where the International Standard referred to has been endorsed as a European Standard or a home-grown European Standard exists, this European Standard shall be applied instead. Pertinent information can be found on the CENELEC web site.

Endorsement notice

The text of the International Standard IEC 60060-3:2006 was approved by CENELEC as a European Standard without any modification.

INTERNATIONAL STANDARD

IEC
60060-3

First edition
2006-02

High-voltage test techniques –

Part 3: Definitions and requirements for on-site testing



Reference number
IEC 60060-3:2006(E)

Publication numbering

As from 1 January 1997 all IEC publications are issued with a designation in the 60000 series. For example, IEC 34-1 is now referred to as IEC 60034-1.

Consolidated editions

The IEC is now publishing consolidated versions of its publications. For example, edition numbers 1.0, 1.1 and 1.2 refer, respectively, to the base publication, the base publication incorporating amendment 1 and the base publication incorporating amendments 1 and 2.

Further information on IEC publications

The technical content of IEC publications is kept under constant review by the IEC, thus ensuring that the content reflects current technology. Information relating to this publication, including its validity, is available in the IEC Catalogue of publications (see below) in addition to new editions, amendments and corrigenda. Information on the subjects under consideration and work in progress undertaken by the technical committee which has prepared this publication, as well as the list of publications issued, is also available from the following:

- **IEC Web Site (www.iec.ch)**
- **Catalogue of IEC publications**
The on-line catalogue on the IEC web site (www.iec.ch/searchpub) enables you to search by a variety of criteria including text searches, technical committees and date of publication. On-line information is also available on recently issued publications, withdrawn and replaced publications, as well as corrigenda.
- **IEC Just Published**
This summary of recently issued publications (www.iec.ch/online_news/justpub) is also available by email. Please contact the Customer Service Centre (see below) for further information.
- **Customer Service Centre**
If you have any questions regarding this publication or need further assistance, please contact the Customer Service Centre:

Email: custserv@iec.ch
Tel: +41 22 919 02 11
Fax: +41 22 919 03 00

INTERNATIONAL STANDARD

IEC 60060-3

First edition
2006-02

High-voltage test techniques –

Part 3: Definitions and requirements for on-site testing

© IEC 2006 — Copyright - all rights reserved

No part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from the publisher.

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

V

For price, see current catalogue

CONTENTS

FOREWORD.....	4
INTRODUCTION.....	6
1 Scope.....	7
2 Normative references	7
3 Terms and definitions	7
4 Common tests and checks on a measuring system	12
4.1 Acceptance test.....	12
4.2 Performance test.....	12
4.3 Performance check.....	12
4.4 Record of performance	13
5 Tests with direct voltage	13
5.1 General	13
5.2 Definitions for direct voltage tests.....	13
5.3 Test voltage	14
5.4 Measurement of the test voltage.....	14
5.5 Tests and checks on measuring systems.....	15
5.6 Withstand voltage test procedure	15
6 Tests with alternating voltage	15
6.1 General	15
6.2 Definitions for alternating voltage tests.....	15
6.3 Test voltage	16
6.4 Measurement of the test voltage.....	17
6.5 Tests and checks on measuring systems.....	18
6.6 Withstand voltage test procedure	18
7 Tests with lightning impulse voltage	18
7.1 General	18
7.2 Definitions for lightning impulse voltage tests	18
7.3 Test voltage	21
7.4 Measurement of the test voltage and determination of the impulse voltage shape	22
7.5 Tests and checks on measuring systems.....	22
7.6 Withstand voltage test procedures.....	23
8 Tests with switching impulse voltage	23
8.1 General	23
8.2 Definitions for switching impulse voltage tests.....	23
8.3 Test voltage	26
8.4 Measurement of the test voltage and determination of the impulse shape.....	26
8.5 Tests and checks on measuring systems.....	27
8.6 Withstand voltage test procedures.....	27
9 Tests with very low frequency voltages.....	28
9.1 General	28
9.2 Definitions for very low frequency voltage tests	28
9.3 Test voltage	29
9.4 Measurement of the test voltage.....	29
9.5 Tests and checks on measuring systems.....	30
9.6 Test procedure	30

10 Tests with damped alternating voltages	30
10.1 General	30
10.2 Definitions for damped alternating voltage tests	30
10.3 Test voltage	31
10.4 Measurement of the test voltage.....	32
10.5 Tests and checks on measuring systems.....	32
10.6 Test procedure	33
Figure 1 – Aperiodic lightning impulse	19
Figure 2 – Oscillating lightning impulse.....	20
Figure 3 – Aperiodic switching impulse	24
Figure 4 – Oscillating switching impulse.....	25
Figure 5 – Damped alternating voltage ($f_r = 1$ kHz, $D_f = 0,2$)	31

INTERNATIONAL ELECTROECHNICAL COMMISSION

HIGH-VOLTAGE TEST TECHNIQUES –

Part 3: Definitions and requirements for on-site testing

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.

International Standard IEC 60060-3 has been prepared by IEC technical committee 42: High-voltage testing techniques.

The text of this standard is based on the following documents:

FDIS	Report on voting
42/203/FDIS	42/204/RVD

Full information on the voting for the approval of this standard 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.

Terms used throughout this standard which have been defined in Clause 3 are written in **bold type**.

საინფორმაციო ნაწილი. სრული ტექსტის სახანაგად შეიძენეთ სტანდარტი.

IEC 60060 consists of the following parts, under the general title *High-voltage test techniques*:

Part 1: General definitions and test requirements

Part 2: Measuring systems

Part 3: Definitions and requirements for on-site testing

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 requirements specified in IEC 60060-1 and IEC 60060-2 cannot always be achieved during on-site tests, due to a variety of external factors not present in factory and laboratory tests such as external electric and magnetic fields, weather conditions, etc.

On-site high-voltage tests are required:

- as withstand tests as part of a commissioning procedure on equipment to demonstrate that transport from manufacturer to site, and the erection on-site complies with manufacturer's specification;
- as withstand tests after on-site repair, to demonstrate that the equipment has been successfully repaired, and is in a suitable condition to return to service;
- for diagnostic purposes, e.g. PD measurement, to demonstrate if the insulation is still free from dangerous defects, and as an indication of life expectation.