
Nosljive elektronske naprave in tehnologije - 201-3. del: Elektronski tekstil - Določanje električne upornosti prevodnega tekstila v simulirani mikroklimi (IEC 63203-201-3:2021)

Wearable electronic devices and technologies - Part 201-3: Electronic textile - Determination of electrical resistance of conductive textiles under simulated microclimate (IEC 63203-201-3:2021)

Tragbare elektronische Geräte und Technologien - Teil 201-3: Elektronische Textilien - Bestimmung des elektrischen Widerstandes von leitfähigen Textilien unter simuliertem Mikroklima (IEC 63203-201-3:2021)

[SIST EN IEC 63203-201-3:2021](https://standards.iteh.ai/catalog/standards/sist/ee55456b-12f8-4818-bf71-940a882b9126/sist-en-iec-63203-201-3-2021)

Technologies et dispositifs électroniques prêts-à-porter - Partie 201-3: Textile électronique - Détermination de la résistance électrique des textiles conducteurs sous microclimat simulé (IEC 63203-201-3:2021)

Ta slovenski standard je istoveten z: EN IEC 63203-201-3:2021

ICS:

59.080.80 Inteligentne tekstilije Smart textiles

SIST EN IEC 63203-201-3:2021 en

iTeh STANDARD PREVIEW
(standards.iteh.ai)

[SIST EN IEC 63203-201-3:2021](https://standards.iteh.ai/catalog/standards/sist/ee55456b-12f8-4818-bf71-540a582b81c6/sist-en-iec-63203-201-3-2021)

<https://standards.iteh.ai/catalog/standards/sist/ee55456b-12f8-4818-bf71-540a582b81c6/sist-en-iec-63203-201-3-2021>

EUROPEAN STANDARD

EN IEC 63203-201-3

NORME EUROPÉENNE

EUROPÄISCHE NORM

May 2021

ICS 59.080.80

English Version

Wearable electronic devices and technologies - Part 201-3:
Electronic textile - Determination of electrical resistance of
conductive textiles under simulated microclimate
(IEC 63203-201-3:2021)

Technologies et dispositifs électroniques prêts-à-porter -
Partie 201-3: Textile électronique - Détermination de la
résistance électrique des textiles conducteurs sous
microclimat simulé
(IEC 63203-201-3:2021)

Tragbare elektronische Geräte und Technologien - Teil 201-
3: Elektronische Textilien - Bestimmung des elektrischen
Widerstandes von leitfähigen Textilien unter simuliertem
Mikroklima
(IEC 63203-201-3:2021)

This European Standard was approved by CENELEC on 2021-05-12. 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 CEN-CENELEC Management Centre 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 CEN-CENELEC Management Centre has the same status as the official versions.

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



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

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

EN IEC 63203-201-3:2021 (E)**European foreword**

The text of document 124/136/FDIS, future edition 1 of IEC 63203-201-3, prepared by IEC/TC 124 "Wearable electronic devices and technologies" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN IEC 63203-201-3:2021.

The following dates are fixed:

- latest date by which the document has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 2022-02-12
- latest date by which the national standards conflicting with the document have to be withdrawn (dow) 2024-05-12

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CENELEC shall not be held responsible for identifying any or all such patent rights.

Endorsement notice

The text of the International Standard IEC 63203-201-3:2021 was approved by CENELEC as a European Standard without any modification.

In the official version, for Bibliography, the following note has to be added for the standard indicated:

ISO 8388:1998 NOTE Harmonized as EN ISO 8388:2003 (not modified)

<https://standards.iteh.ai/catalog/standards/sist/ee55456b-12f8-4818-bf71-540a582b81c6/sist-en-iec-63203-201-3-2021>

Annex ZA (normative)

Normative references to international publications with their corresponding European publications

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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.

NOTE 1 Where an International Publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

NOTE 2 Up-to-date information on the latest versions of the European Standards listed in this annex is available here: www.cenelec.eu.

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
ISO 139	-	Textiles - Standard atmospheres for conditioning and testing	EN ISO 139	-
ISO 11092	2014	Textiles - Physiological effects - Measurement of thermal and water vapour resistance under steady-state conditions (sweating guarded-hotplate test)	EN ISO 11092	2014
ISO 21232	2018	Textiles - Determination of moisturizing effect of textile materials by measurement of microclimate between textiles and simulated human skin using sweating guarded hotplate	-	-
-	-	Textiles and textile products - Electrically conductive textiles - Determination of the linear electrical resistance of conductive tracks	EN 16812	2016

iTeh STANDARD PREVIEW
(standards.iteh.ai)

[SIST EN IEC 63203-201-3:2021](https://standards.iteh.ai/catalog/standards/sist/ee55456b-12f8-4818-bf71-540a582b81c6/sist-en-iec-63203-201-3-2021)

<https://standards.iteh.ai/catalog/standards/sist/ee55456b-12f8-4818-bf71-540a582b81c6/sist-en-iec-63203-201-3-2021>



IEC 63203-201-3

Edition 1.0 2021-04

INTERNATIONAL STANDARD

NORME INTERNATIONALE

**Wearable electronic devices and technologies –
Part 201-3: Electronic textile – Determination of electrical resistance of
conductive textiles under simulated microclimate**

**Technologies et dispositifs électroniques prêts-à-porter –
Partie 201-3: Textile électronique – Détermination de la résistance électrique
des textiles conducteurs sous microclimat simulé**

INTERNATIONAL
ELECTROTECHNICAL
COMMISSION

COMMISSION
ELECTROTECHNIQUE
INTERNATIONALE

ICS 59.080.80

ISBN 978-2-8322-9640-0

**Warning! Make sure that you obtained this publication from an authorized distributor.
Attention! Veuillez vous assurer que vous avez obtenu cette publication via un distributeur agréé.**

CONTENTS

FOREWORD.....	3
1 Scope.....	5
2 Normative references	5
3 Terms and definitions	5
4 Principle of test	6
5 Test equipment.....	6
5.1 Sweating guarded-hotplate	6
5.2 Device including temperature and humidity sensor with set-up of the four electrode – four wire method.....	6
5.3 Membranes	7
5.4 Test enclosure of the sweating guarded-hotplate	7
6 Test specimens	8
6.1 Number of test specimens.....	8
6.2 Dimension of specimens	9
6.3 Conditioning.....	9
7 Test procedure	9
7.1 Preparation of textile-based electrically conductive track contact points for necessary measurement stability	9
7.2 Specimen mounting on measuring unit.....	9
7.3 Determination of the apparatus constant R_{et_al} and measurement of water- vapour resistance including air layer R_{et_al} and RH).....	9
7.4 Determination of linear electrical resistance	9
8 Test report.....	10
Annex A (informative) Example of test results	11
A.1 Sample	11
A.2 R_{et_al} , RH and R_L	11
Bibliography.....	13
Figure 1 – Sweating guarded-hotplate.....	7
Figure 2 – Device including temperature and humidity sensor with set-up of four electrode – four wire method.....	8
Figure 3 – Example of textile-based electrically conductive track	8
Figure A.1 – Conductive fabric.....	11
Table A.1 – Arithmetic mean and CV % of test results	12

INTERNATIONAL ELECTROTECHNICAL COMMISSION

WEARABLE ELECTRONIC DEVICES AND TECHNOLOGIES –

Part 201-3: Electronic textile – Determination of electrical resistance of conductive textiles under simulated microclimate

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 itself does not provide any attestation of conformity. Independent certification bodies provide conformity assessment services and, in some areas, access to IEC marks of conformity. IEC is not responsible for any services carried out by independent certification bodies.
- 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 63203-201-3 has been prepared by IEC technical committee 124: Wearable electronic devices and technologies.

The text of this International Standard is based on the following documents:

FDIS	Report on voting
124/136/FDIS	124/142/RVD

Full information on the voting for the approval of this International Standard can be found in the report on voting indicated in the above table.

This document has been drafted in accordance with the ISO/IEC Directives, Part 2.

A list of all parts in the IEC 63203 series, published under the general title *Wearable electronic devices and technologies*, can be found on the IEC website.

The committee has decided that the contents of this document will remain unchanged until the stability date indicated on the IEC website under "<http://webstore.iec.ch>" in the data related to the specific document. At this date, the document will be

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

iTeh STANDARD PREVIEW (standards.iteh.ai)

[SIST EN IEC 63203-201-3:2021](https://standards.iteh.ai/catalog/standards/sist/ee55456b-12f8-4818-bf71-540a582b81c6/sist-en-iec-63203-201-3-2021)

<https://standards.iteh.ai/catalog/standards/sist/ee55456b-12f8-4818-bf71-540a582b81c6/sist-en-iec-63203-201-3-2021>