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Bärbar elektronik – Del 201-1: Elektroniska textilier – Mätmetoder för grundläggande egenskaper för ledande garn

*Wearable electronic devices and technologies –
Part 201-1: Electronic textile –
Measurement methods for basic properties of conductive yarns*

Som svensk standard gäller europastandarden EN IEC 63203-201-1:2022. Den svenska standarden innehåller den officiella engelska språkversionen av EN IEC 63203-201-1:2022.

Nationellt förord

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- **europastandardens ikraftsättningsdokument**, utarbetat inom CENELEC
- **IEC 63203-201-1, First edition, 2022 - Wearable electronic devices and technologies - Part 201-1: Electronic textile - Measurement methods for basic properties of conductive yarns**

utarbetad inom International Electrotechnical Commission, IEC.

ICS 59.080.80; 59.080.20

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English Version

Wearable electronic devices and technologies - Part 201-1:
Electronic textile - Measurement methods for basic properties of
conductive yarns
(IEC 63203-201-1:2022)

Technologies et dispositifs électroniques prêts-à-porter -
Partie 201-1: Textile électronique - Méthodes de mesure
des propriétés fondamentales des fils conducteurs
(IEC 63203-201-1:2022)

Tragbare elektronische Geräte und Technologien - Teil 201-
1: Elektronische Textilien - Messverfahren für die
grundlegenden Eigenschaften von leitfähigen Garnen
(IEC 63203-201-1:2022)

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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

European foreword

The text of document 124/175/FDIS, future edition 1 of IEC 63203-201-1, 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 63203-201-1:2022.

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) 2023-02-28
- latest date by which the national standards conflicting with the document have to be withdrawn (dow) 2025-05-31

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Any feedback and questions on this document should be directed to the users' national committee. A complete listing of these bodies can be found on the CENELEC website.

Endorsement notice

The text of the International Standard IEC 63203-201-1:2022 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:

IEC 63203-101-1:2021 NOTE Harmonized as EN IEC 63203-101-1:2021 (not modified)

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>
IEC 60468	1974	Method of measurement of resistivity of metallic materials	-	-
ISO 105-E04	-	Textiles - Tests for colour fastness - Part E04: Colour fastness to perspiration	EN ISO 105-E04	-
ISO 139	-	Textiles - Standard atmospheres for conditioning and testing	EN ISO 139	-
ISO 6330	-	Textiles - Domestic washing and drying procedures for textile testing	EN ISO 6330	-
-	-	Textiles and textile products - Electrically conductive textiles - Determination of the linear electrical resistance of conductive tracks	EN 16812	2016



INTERNATIONAL STANDARD

NORME INTERNATIONALE

**Wearable electronic devices and technologies –
Part 201-1: Electronic textile – Measurement methods for basic properties of
conductive yarns**

**Technologies et dispositifs électroniques prêts-à-porter –
Partie 201-1: Textile électronique – Méthodes de mesure des propriétés
fondamentales des fils conducteurs**

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

WEARABLE ELECTRONIC DEVICES AND TECHNOLOGIES –**Part 201-1: Electronic textile –
Measurement methods for basic properties of conductive yarns**

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.
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IEC 63203-201-1 has been prepared by IEC technical committee 124: Wearable electronic devices and technologies. It is an International Standard.

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

Draft	Report on voting
124/175/FDIS	124/180/RVD

Full information on the voting for its approval can be found in the report on voting indicated in the above table.

The language used for the development of this International Standard is English.

This document was drafted in accordance with ISO/IEC Directives, Part 2, and developed in accordance with ISO/IEC Directives, Part 1 and ISO/IEC Directives, IEC Supplement, available at www.iec.ch/members_experts/refdocs. The main document types developed by IEC are described in greater detail at www.iec.ch/standardsdev/publications.

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 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.

INTRODUCTION

This document contains provisions for conductive yarns and defines measurement methods of properties of conductive yarns used in electronic textile (e-textile) in wearable electronics. A conductive yarn can be incorporated into the fabric which, in turn, can be used to manufacture a wearable electronics product. The conductive yarn can transmit electric signals and/or supply electric power. Therefore, measurement methods are defined for the characteristics of conductive yarns.

The IEC 63203-2 series relates mainly to measurement methods for electronic textile (e-textile) in wearable electronics.

The IEC 63203-2 series is divided into parts according to each category of electronic textile. Each part is prepared as a generic specification containing fundamental information for the area of printed electronics.

The IEC 63203-2 series consists of the following parts:

IEC 63203-201: E-textile materials

IEC 63203-201-1: E-textile materials – Conductive yarn

IEC 63203-201-2: E-textile materials – Conductive fabrics and insulation materials

IEC 63203-202: Passive electric parts for e-textiles

IEC 63203-202-1: Passive e-textile parts – Connectors for e-textile applications

IEC 63203-203: E-textile functional elements

IEC 63203-204: E-textile systems (Evaluation method for garment-type wearable systems)

IEC 63203-204-1: E-textile systems – Test method for assessing washing durability of leisurewear and sportswear e-textile systems

(Subsequent parts will be prepared according to other categories.)

Furthermore, sectional specifications, blank detail specifications, and detail specifications of each category will follow these parts.

WEARABLE ELECTRONIC DEVICES AND TECHNOLOGIES –

Part 201-1: Electronic textile – Measurement methods for basic properties of conductive yarns

1 Scope

This part of IEC 63203-201 specifies provisions and test methods for measurement of properties of conductive yarns. Conductive yarns covered in this document have conductivity of a level that can be used for transmission of electric signals, supply of electric power and electromagnetic shield. They do not include high-resistance conductive yarn used for anti-static and heating use. Conductive yarns are the basic material in electronic textiles and are mainly used as conductive traces in clothes-type wearable devices, as well as with secondary processing (woven, knitted, embroidered, nonwoven, etc.) to provide conductive fabrics.

This document does not define the required characteristics of the conductive yarn; rather, it specifies the handling and measurement methods for general and electrical properties of conductive yarn.

2 Normative references

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.

IEC 60468:1974, *Method of measurement of resistivity of metallic materials*

ISO 105-E04, *Textiles – Tests for colour fastness – Part E04: Colour fastness to perspiration*

ISO 139, *Textiles – Standard atmospheres for conditioning and testing*

ISO 6330, *Textiles – Domestic washing and drying procedures for textile testing*

EN 16812:2016, *Textiles and textile products – Electrically conductive textiles – Determination of the linear electrical resistance of conductive tracks*