



BSI Standards Publication

Wearable electronic devices and technologies

Part 204-2: Electronic textile — Test method to characterize electrical resistance change in knee and elbow bending test of e-textiles

National foreword

This British Standard is the UK implementation of EN IEC 63203-204-2:2025. It is identical to IEC 63203-204-2:2025.

The UK participation in its preparation was entrusted to Technical Committee AMT/9, Printed Electronics.

A list of organizations represented on this committee can be obtained on request to its committee manager.

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Amendments/corrigenda issued since publication

Date	Text affected
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English Version

Wearable electronic devices and technologies - Part 204-2:
Electronic textile - Test method to characterize electrical
resistance change in knee and elbow bending test of e-textiles
(IEC 63203-204-2:2025)

Technologies et dispositifs électroniques prêts-à-porter -
Partie 204-2: Textile électronique - Méthode d'essai pour
caractériser la variation de la résistance électrique lors de
l'essai de flexion du genou et du coude des textiles
électroniques
(IEC 63203-204-2:2025)

Tragbare elektronische Geräte und Technologien -
Teil 204-2: Elektronische Textilien - Prüfverfahren zur
Charakterisierung der Änderung des elektrischen
Widerstands beim Knie- und Ellbogenbiegeversuch von
E-Textilien
(IEC 63203-204-2:2025)

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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 124/299/FDIS, future edition 1 of IEC 63203-204-2, prepared by TC 124 "Wearable electronic devices and technologies" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN IEC 63203-204-2:2025.

The following dates are fixed:

- latest date by which the document has to be implemented at national (dop) 2026-04-30 level by publication of an identical national standard or by endorsement
- latest date by which the national standards conflicting with the (dow) 2028-04-30 document have to be withdrawn

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The text of the International Standard IEC 63203-204-2:2025 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 NOTE Approved as EN IEC 63203-101-1

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.cencenelec.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 5084	-	Textiles - Determination of thickness of textiles and textile products	EN ISO 5084	-
-	-	Textiles and textile products - Electrically conductive textiles - Determination of the linear electrical resistance of conductive tracks	EN 16812	2016

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

WEARABLE ELECTRONIC DEVICES AND TECHNOLOGIES –

Part 204-2: Electronic textile – Test method to characterize electrical resistance change in knee and elbow bending test of e-textiles

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IEC 63203-204-2 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
124/299/FDIS	124/306/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/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, or
- revised.

WEARABLE ELECTRONIC DEVICES AND TECHNOLOGIES –

Part 204-2: Electronic textile – Test method to characterize electrical resistance change in knee and elbow bending test of e-textiles

1 Scope

This part of IEC 63203 specifies a test method for e-textiles for measuring the change of electrical resistance during bending of the knee and elbow joints. It uses a dynamic method. This document is applicable to e-textiles.

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.

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

ISO 5084, *Textiles – Determination of thickness of textiles and textile products*

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

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

- IEC Electropedia: available at <https://www.electropedia.org/>
- ISO Online browsing platform: available at <https://www.iso.org/obp>

3.1

electrode

contact between the measurement wire and the specimen

[SOURCE: EN 16812:2016, 3.5]

3.2

bending rate

number of bending cycles per minute, with one cycle comprising one bending/unbending

Note 1 to entry: The bending rate is expressed in cpm (cycles per minute).