SVENSK STANDARD

SS-EN IEC 63203-402-1, utg 1:2023

Fastställd	Sida	Ansvarig kommitté
2023-09-20	1 (18)	SEK TK IoT

Kroppsburen elektronik – Enheter och system – Del 402-1: Funktionsprovning av kroppsburen elektronik för träning – Mätmetod för rörelsesensorer av handsktyp för mätning av fingerrörelser

Wearable electronic devices and technologies –
Part 402-1: Performance measurement of fitness wearables –
Test methods of glove-type motion sensors for measuring finger movements

Som svensk standard gäller europastandarden EN IEC 63203-402-1:2022. Den svenska standarden innehåller den officiella engelska språkversionen av EN IEC 63203-402-1:2022.

Nationellt förord

Europastandarden EN IEC 63203-402-1:2022

består av:

– **europastandardens ikraftsättningsdokument,** utarbetat inom CENELEC
– **IEC 63203-402-1, First edition, 2022 - Wearable electronic devices and technologies - Part 402-1: Performance measurement of fitness wearables - Test methods of glove-type motion sensors for measuring finger movements**

utarbetad inom International Electrotechnical Commission, IEC.

ICS 31.020.00

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EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN IEC 63203-402-1

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English Version

Wearable electronic devices and technologies - Part 402-1: Performance measurement of fitness wearables - Test methods of glove-type motion sensors for measuring finger movements (IEC 63203-402-1:2022)

Technologies et dispositifs électroniques prêts-à-porter - Partie 402-1: Mesure des performances des dispositifs prêts-à-porter d'activité physique - Méthodes d'essai des capteurs de mouvement type gant pour le mesurage des mouvements digitaux
(IEC 63203-402-1:2022)

Tragbare elektronische Geräte und Technologien - Teil 402-1: Performance Messung von Fitness Wearables - Prüfverfahren für handschuhartige Bewegungssensoren zur Messung von Fingerbewegungen
(IEC 63203-402-1:2022)

This European Standard was approved by CENELEC on 2022-12-09. 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.

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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

Ref. No. EN IEC 63203-402-1:2022 E

SEK Svensk Elstandard SS-EN IEC 63203-402-1, utg 1:2023

European foreword

The text of document 124/195/FDIS, future edition 1 of IEC 63203-402-1, 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 63203-402-1:2022.

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)	2023-09-09
• latest date by which the national standards conflicting with the document have to be withdrawn	(dow)	2025-12-09

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.

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 63203-402-1:2022 was approved by CENELEC as a European Standard without any modification.

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.

Publication	Year	Title	EN/HD	Year
IEC 62047-6	-	Semiconductor devices - Micro-electromechanical devices - Part 6: Axial fatigue testing methods of thin film materials	EN 62047-6	-
IEC 62951-1	-	Semiconductor devices - Flexible and stretchable semiconductor devices - Part 1: Bending test method for conductive thin films on flexible substrates	-	-
ISO 291	-	Plastics - Standard atmospheres for conditioning and testing	EN ISO 291	-
ISO 21420	2020	Protective gloves - General requirements and test methods	EN ISO 21420	2020

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Wearable electronic devices and technologies – Part 402-1: Performance measurement of fitness wearables – Test methods of glove-type motion sensors for measuring finger movements

Technologies et dispositifs électroniques prêts-à-porter – Partie 402-1: Mesure des performances des dispositifs prêts-à-porter d'activité physique – Méthodes d'essai des capteurs de mouvement type gant pour le mesurage des mouvements digitaux

INTERNATIONAL ELECTROTECHNICAL COMMISSION

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

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WEARABLE ELECTRONIC DEVICES AND TECHNOLOGIES –

Part 402-1: Performance measurement of fitness wearables – Test methods of glove-type motion sensors for measuring finger movements

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 63203-402-1 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
124/195/FDIS	124/204/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,
- replaced by a revised edition, or
- amended.

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WEARABLE ELECTRONIC DEVICES AND TECHNOLOGIES –

Part 402-1: Performance measurement of fitness wearables – Test methods of glove-type motion sensors for measuring finger movements

1 Scope

This document specifies test methods for wearable glove-type motion sensors to measure finger movements. The measurement methods include goniometric parameters related to the finger postures and flexion dynamics. Glove-type motion sensors are the type of gloves considered within the scope of this document for testing and measurement. This document describes direct and indirect measurement methods. In the direct measurement method, the angles of the joints of each finger are directly measured by a goniometer. The indirect method uses a measurement device such as a servomotor-based angle-measuring device. This document is applicable to angle measurement of all gloves with glove-type motion sensors without limitation of the device technology or size.

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 62047-6, *Semiconductor devices – Micro-electromechanical devices – Part 6: Axial fatigue testing methods of thin film materials*

IEC 62951-1, *Semiconductor devices – Flexible and stretchable semiconductor devices – Part 1: Bending test method for conductive thin films on flexible substrates*

ISO 291, *Plastics – Standard atmospheres for conditioning and testing*

ISO 21420:2020, *Protective gloves – General requirements and test methods*