

# INTERNATIONAL STANDARD

## NORME INTERNATIONALE



**Wearable electronic devices and technologies –  
Part 401-1: Devices and systems: functional elements – Evaluation method of  
the stretchable resistive strain sensor**

**Technologies et dispositifs électroniques prêt-à-porter –  
Partie 401-1: Dispositifs et systèmes: éléments de fonctionnement – Méthode  
d'évaluation de la jauge de contrainte extensible de type résistif**



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**WEARABLE ELECTRONIC DEVICES AND TECHNOLOGIES –****Part 401-1: Devices and systems: functional elements –  
Evaluation method of the stretchable resistive strain sensor**

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

Draft	Report on voting
124/223/FDIS	124/239/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](http://www.iec.ch/members_experts/refdocs). The main document types developed by IEC are described in greater detail at [www.iec.ch/publications](http://www.iec.ch/publications).

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## WEARABLE ELECTRONIC DEVICES AND TECHNOLOGIES –

### Part 401-1: Devices and systems: functional elements – Evaluation method of the stretchable resistive strain sensor

#### 1 Scope

This part of IEC 63203-401 specifies a measurement method of tensile strain for stretchable, resistive strain sensors. This document describes characterization procedures for evaluation of the gauge factor, linearity, response characteristics, and hysteresis of unimodal tension sensors but is not appropriate for assessment of the physical properties of the sensor material such as the elastic modulus, elastic limit, and Poisson's ratio.

#### 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 62899-202-4:2021, *Printed electronics – Part 202-4: Materials – Conductive ink – Measurement methods for properties of stretchable printed layers (conductive and insulating)*

ISO 291:2008, *Plastics – Standard atmospheres for conditioning and testing*

ISO/TS 12901-2:2014, *Nanotechnologies – Occupational risk management applied to engineered nanomaterials – Part 2: Use of the control banding approach*

#### 3 Terms and definitions

##### 3.1 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>

##### 3.1.1

##### **stretchable substrate**

##### **stretchable material**

substrate or material able to recover original size and shape immediately after the removal of the extending force causing deformation

Note 1 to entry: In this document, the notion of "stretchability" is based on the elasticity of the substrate.

[SOURCE: IEC 63203-101-1:2021, 3.10 [1]]