
Ergonomija medsebojnega vplivanja človek-sistem - 430. del: Priporočila za načrtovanje brezkontaktnega vnosa s kretnjami za zmanjšanje biomehanske obremenitve (ISO/TS 9241-430:2021)

Priporočila za oblikovanje vnosa s kretnjami brez dotika za zmanjšanje biomehanske obremenitve

Ergonomics of human-system interaction - Part 430: Recommendations for the design of non-touch gestural input for the reduction of biomechanical stress (ISO/TS 9241-430:2021)

Ergonomie de l'interaction homme-système - Partie 430: Recommandations pour la conception de la saisie gestuelle sans contact pour la réduction du stress biomécanique (ISO/TS 9241-430:2021)

Ta slovenski standard je istoveten z: CEN ISO/TS 9241-430:2023

ICS:

13.100	Varnost pri delu. Industrijska higiena	Occupational safety. Industrial hygiene
13.180	Ergonomija	Ergonomics
35.180	Terminalska in druga periferna oprema IT	IT Terminal and other peripheral equipment

SIST-TS CEN ISO/TS 9241-430:2023 en,fr,de

TECHNICAL SPECIFICATION
SPÉCIFICATION TECHNIQUE
TECHNISCHE SPEZIFIKATION

CEN ISO/TS 9241-430

March 2023

ICS 13.100; 13.180; 35.180

English Version

**Ergonomics of human-system interaction - Part 430:
Recommendations for the design of non-touch gestural
input for the reduction of biomechanical stress (ISO/TS
9241-430:2021)**

Ergonomie de l'interaction homme-système - Partie
430: Recommandations pour la conception de la saisie
gestuelle sans contact pour la réduction du stress
biomécanique (ISO/TS 9241-430:2021)

This Technical Specification (CEN/TS) was approved by CEN on 17 March 2023 for provisional application.

The period of validity of this CEN/TS is limited initially to three years. After two years the members of CEN will be requested to submit their comments, particularly on the question whether the CEN/TS can be converted into a European Standard.

CEN members are required to announce the existence of this CEN/TS in the same way as for an EN and to make the CEN/TS available promptly at national level in an appropriate form. It is permissible to keep conflicting national standards in force (in parallel to the CEN/TS) until the final decision about the possible conversion of the CEN/TS into an EN is reached.

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

[SIST-TS CEN ISO/TS 9241-430:2023](https://standards.iteh.ai/catalog/standards/sist/1292798e-120e-40d2-a164-e9f3e4a4f719/sist-ts-cen-iso-ts-9241-430-2023)

<https://standards.iteh.ai/catalog/standards/sist/1292798e-120e-40d2-a164-e9f3e4a4f719/sist-ts-cen-iso-ts-9241-430-2023>



EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

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

Contents	Page
European foreword.....	3

iTeh Standards
(<https://standards.iteh.ai>)
Document Preview

[SIST-TS CEN ISO/TS 9241-430:2023](https://standards.iteh.ai/catalog/standards/sist/1292798e-120e-40d2-a164-e9f3e4a4f719/sist-ts-cen-iso-ts-9241-430-2023)

<https://standards.iteh.ai/catalog/standards/sist/1292798e-120e-40d2-a164-e9f3e4a4f719/sist-ts-cen-iso-ts-9241-430-2023>

European foreword

The text of ISO/TS 9241-430:2021 has been prepared by Technical Committee ISO/TC 159 "Ergonomics" of the International Organization for Standardization (ISO) and has been taken over as CEN ISO/TS 9241-430:2023 by Technical Committee CEN/TC 122 "Ergonomics" the secretariat of which is held by DIN.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN 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 standards body. A complete listing of these bodies can be found on the CEN website.

According to the CEN-CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Türkiye and the United Kingdom.

Endorsement notice

The text of ISO/TS 9241-430:2021 has been approved by CEN as CEN ISO/TS 9241-430:2023 without any modification.

iteh Standards
(<https://standards.iteh.ai>)
Document Preview

[SIST-TS CEN ISO/TS 9241-430:2023](https://standards.iteh.ai/catalog/standards/sist/1292798e-120e-40d2-a164-e9f3e4a4f719/sist-ts-cen-iso-ts-9241-430-2023)

<https://standards.iteh.ai/catalog/standards/sist/1292798e-120e-40d2-a164-e9f3e4a4f719/sist-ts-cen-iso-ts-9241-430-2023>

**TECHNICAL
SPECIFICATION**

**ISO/TS
9241-430**

First edition
2021-12

**Ergonomics of human-system
interaction —**

**Part 430:
Recommendations for the design
of non-touch gestural input for the
reduction of biomechanical stress**

iTeh Standards
(<https://standards.iteh.ai>)
Document Preview

[SIST-TS CEN ISO/TS 9241-430:2023](https://standards.iteh.ai/catalog/standards/sist/1292798e-120e-40d2-a164-e9f3e4a4f719/sist-ts-cen-iso-ts-9241-430-2023)

<https://standards.iteh.ai/catalog/standards/sist/1292798e-120e-40d2-a164-e9f3e4a4f719/sist-ts-cen-iso-ts-9241-430-2023>



Reference number
ISO/TS 9241-430:2021(E)

© ISO 2021

iTeh Standards
(<https://standards.iteh.ai>)
Document Preview

[SIST-TS CEN ISO/TS 9241-430:2023](https://standards.iteh.ai/catalog/standards/sist/1292798e-120e-40d2-a164-e9f3e4a4f719/sist-ts-cen-iso-ts-9241-430-2023)

<https://standards.iteh.ai/catalog/standards/sist/1292798e-120e-40d2-a164-e9f3e4a4f719/sist-ts-cen-iso-ts-9241-430-2023>



COPYRIGHT PROTECTED DOCUMENT

© ISO 2021

All rights reserved. Unless otherwise specified, or required in the context of its implementation, no part of this publication may be reproduced or utilized otherwise in any form or by any means, electronic or mechanical, including photocopying, or posting on the internet or an intranet, without prior written permission. Permission can be requested from either ISO at the address below or ISO's member body in the country of the requester.

ISO copyright office
CP 401 • Ch. de Blandonnet 8
CH-1214 Vernier, Geneva
Phone: +41 22 749 01 11
Email: copyright@iso.org
Website: www.iso.org

Published in Switzerland

Contents

	Page
Foreword	iv
Introduction	v
1 Scope	1
2 Normative references	1
3 Terms and definitions	2
4 Selection of non-contacting gestures	3
4.1 Overall approach to the selection of non-contacting gestures.....	3
4.2 Large shoulder and elbow movements.....	3
4.3 Optimal hand location relative to body.....	3
4.4 Wrist and forearm posture.....	3
4.5 Comfort of hand postures and motions.....	3
4.5.1 Fist, neutral and extended fingers.....	3
4.5.2 Asynchronous adjacent finger postures.....	4
4.5.3 Thumb flexion or extension and abduction or adduction.....	4
4.5.4 Speed of finger or hand movements and impact.....	4
4.5.5 Hand microgestures.....	5
5 Evaluation of non-contacting gestures	5
5.1 General.....	5
5.2 Laboratory-based study design.....	5
5.3 Subjects for studies.....	5
5.4 Independent variables.....	5
5.5 Example technologies for gesture capture.....	6
5.6 Dependent variables (outcome measures).....	6
5.7 Examples of tasks.....	7
5.8 Target size.....	8
5.9 Data analysis, interpretation and reporting.....	9
Annex A (informative) Example of questionnaire for assessing subjective usability measures	10
Bibliography	11

ISO/TS 9241-430:2021(E)

Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 159, *Ergonomics*, Subcommittee SC 4, *Ergonomics of human-system interaction*.

A list of all parts in the ISO 9241 series can be found on the ISO website.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

<https://standards.iteh.ai/catalog/standards/sist/1292798e-120e-40d2-a164-e9f3e4a4f719/sist-ts-cen-iso-ts-9241-430-2023>