

SLOVENSKI STANDARD

SIST EN ISO 6709:2023

01-januar-2023

Nadomešča:
SIST EN ISO 6709:2009

Standardna predstavitev geografske točkovne lokacije s koordinatami (ISO 6709:2022)

Standard representation of geographic point location by coordinates (ISO 6709:2022)

Standarddarstellung für geographische Punkte durch Koordinaten (ISO 6709:2022)

Représentation normalisée de la localisation des points géographiques par coordonnées (ISO 6709:2022)

<https://standards.iteh.ai/catalog/standards/sist/be457daa-9124-493c-8053-f3d75965db7c/sist-en-iso-6709-2023>

Ta slovenski standard je istoveten z: EN ISO 6709:2022

ICS:

07.040	Astronomija. Geodezija. Geografija	Astronomy. Geodesy. Geography
35.240.70	Uporabniške rešitve IT v znanosti	IT applications in science

SIST EN ISO 6709:2023

en,fr,de

EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

EN ISO 6709

October 2022

ICS 35.240.70

Supersedes EN ISO 6709:2009

English Version

Standard representation of geographic point location by
coordinates (ISO 6709:2022)

Représentation normalisée de la localisation des points
géographiques par coordonnées (ISO 6709:2022)

Standarddarstellung für geographische Punkte durch
Koordinaten (ISO 6709:2022)

This European Standard was approved by CEN on 5 July 2021.

CEN 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 CEN 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 CEN member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

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 EN ISO 6709:2023](https://standards.iteh.ai/catalog/standards/sist/be457daa-9124-493c-8053-f3d75965db7c/sist-en-iso-6709-2023)

<https://standards.iteh.ai/catalog/standards/sist/be457daa-9124-493c-8053-f3d75965db7c/sist-en-iso-6709-2023>



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 STANDARD PREVIEW
(standards.iteh.ai)

SIST EN ISO 6709:2023

<https://standards.iteh.ai/catalog/standards/sist/be457daa-9124-493c-8053-f3d75965db7c/sist-en-iso-6709-2023>

European foreword

This document (EN ISO 6709:2022) has been prepared by Technical Committee ISO/TC 211 "Geographic information/Geomatics" in collaboration with Technical Committee CEN/TC 287 "Geographic Information" the secretariat of which is held by BSI.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by April 2023, and conflicting national standards shall be withdrawn at the latest by April 2023.

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.

This document supersedes EN ISO 6709:2009.

Any feedback and questions on this document should be directed to the users' national standards body/national committee. 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 6709:2022 has been approved by CEN as EN ISO 6709:2022 without any modification.

INTERNATIONAL STANDARD

**ISO
6709**

Third edition
2022-09

Standard representation of geographic point location by coordinates

*Représentation normalisée de la localisation des points
géographiques par coordonnées*

iTeh STANDARD PREVIEW
(standards.iteh.ai)

[SIST EN ISO 6709:2023](https://standards.iteh.ai/catalog/standards/sist/be457daa-9124-493c-8053-f3d75965db7c/sist-en-iso-6709-2023)

<https://standards.iteh.ai/catalog/standards/sist/be457daa-9124-493c-8053-f3d75965db7c/sist-en-iso-6709-2023>



Reference number
ISO 6709:2022(E)

© ISO 2022

iTeh STANDARD PREVIEW (standards.iteh.ai)

SIST EN ISO 6709:2023

<https://standards.iteh.ai/catalog/standards/sist/be457daa-9124-493c-8053-f3d75965db7c/sist-en-iso-6709-2023>



COPYRIGHT PROTECTED DOCUMENT

© ISO 2022

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	vi
1 Scope	1
2 Normative references	1
3 Terms and definitions	1
4 Abbreviated terms and character code notations	4
4.1 Abbreviated terms	4
4.2 Character code notations	5
5 Conformance	5
6 Geographic point location (GPL) representation	5
6.1 Overview	5
6.2 Component representation	6
6.3 Coordinate tuple	6
6.4 Character string delimiters and terminator notation	7
6.5 CRS identifier structure	8
6.6 Text string representation	10
6.6.1 Background	10
6.6.2 Formatting rules for angular measures	10
6.6.3 Component structure	12
7 Human-readable GPL representation	16
7.1 Overview of human-readable GPL representation	16
7.2 General requirements of human-readable GPL representation	16
7.3 Formatted examples of human-readable text strings	18
Annex A (normative) Conformance and abstract test suite	20
Annex B (normative) Backwards compatible representation of geographic point location	23
Annex C (informative) Uniqueness of latitude and longitude coordinates	29
Annex D (informative) Latitude and longitude resolution	30
Annex E (informative) Changes compared to ISO 6709:2008	31
Annex F (normative) Character encodings	33
Bibliography	35

ISO 6709:2022(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 211, *Geographic information/Geomatics*, in collaboration with the European Committee for Standardization (CEN) Technical Committee CEN/TC 287, *Geographic Information*, in accordance with the Agreement on technical cooperation between ISO and CEN (Vienna Agreement).

This third edition cancels and replaces the second edition (ISO 6709:2008), which has been technically revised. It also incorporates the Technical Corrigendum ISO 6709:2008/Cor. 1:2009.

The main changes are as follows:

- Harmonization with other recently revised ISO/TC 211 International Standards;
- Clarification of normative requirements to maintain rigid backwards compatibility when required;
- Correction of the issues contained in the Technical Corrigendum ISO 6709:2008/Cor. 1:2009;
- Correction of annexes that contained normative requirements but were labelled as informative;
- Deletion of annexes and concepts which have changed and were no longer suitable for the revised edition;
- Correction of instances where European numeric formatting conventions were incorrectly inserted. These conventions will no longer be recommended;
- Clarification of editorial issues.

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.

In accordance with the ISO/IEC Directives, Part 2, 2018, *Rules for the structure and drafting of International Standards*, in International Standards the decimal sign is a comma on the line. However, the General Conference on Weights and Measures (*Conférence Générale des Poids et Mesures*) at its meeting in 2003 passed unanimously the following resolution:

“The decimal marker shall be either a point on the line or a comma on the line.”

In practice, the choice between these alternatives depends on customary use in the language concerned. In the technical areas of geodesy and geographic information it is customary for the decimal point always to be used, for all languages. That practice is used throughout this document.

iTeh STANDARD PREVIEW
(standards.iteh.ai)

SIST EN ISO 6709:2023

<https://standards.iteh.ai/catalog/standards/sist/be457daa-9124-493c-8053-f3d75965db7c/sist-en-iso-6709-2023>

Introduction

Geographic point location (GPL) is the description of a well-defined geographic place using a single coordinate tuple. Efficient interchange of GPL data requires formats which are universally interpretable and which allow the identification of points on, above and below the Earth's surface. Users in various disciplines have different requirements. This is exemplified by the use of degrees and decimal degrees, as well as the traditional degrees, minutes and seconds, for recording latitude and longitude. User applications can also require various levels of precision and can use latitude and longitude without height.

ISO 6709:1983 defined a specific format representation of latitude and longitude, and optionally altitude.

ISO 6709:2008 revised the format representation of the 1983 edition by:

- adding the ability to identify the coordinate reference system (CRS) to which coordinates are referenced, without which location is ambiguous, and
- expanding the use of altitude to allow for any ellipsoidal or gravity-related height or depth.

Since the first edition of this document in 1983, the field of geodesy has undergone significant technological advances, along with the continued development of other related geodesy and geomatics standards.

The aim of this edition is to address these new advances and standards and to revise the coordinate string suitable for digital representation ([Clause 6](#)) while continuing to support the requirements of the previous edition ([Annex B](#)).

[Clause 7](#) defines a simpler structure for the unambiguous representation of GPL in a human-readable format.

In addition, a series of annexes are provided with the following content:

- [Annex A](#) (normative) defines the abstract test suite used for conformance testing;
- [Annex B](#) (normative) defines the representation of latitude and longitude coordinates that maintain backwards compatibility with ISO 6709:2008;
- [Annex C](#) (informative) presents a description and examples of how the position of coordinates can appear ambiguous without the use of a CRS;
- [Annex D](#) (informative) presents a table of mathematical precision values of resolution for latitude and longitude;
- [Annex E](#) (informative) describes the changes in this document compared to the previous edition of ISO 6709;
- [Annex F](#) (normative) specifies encodings for character strings and delimiters required in this document.

The following options are highlighted to users of this document:

- a) For all cases where backwards compatibility is not required, this document recommends using the methods and rules specified in [Clause 6](#), GPL representation, or [Clause 7](#), human-readable GPL representation;
- b) However, in systems and environments where backwards compatibility with ISO 6709:2008 is required, the methods and rules specified in [Annex B](#) can be used.

In addition, when using [Annex B](#), it is recommended that suitable and comprehensive ancillary documentation, not defined within this document or in previous editions of this document, be

prepared and accompany all instances of geographic point location text strings and human-readable representations claiming backwards compatibility.

The use of this document:

- establishes an expanded point representation string format supporting the current concepts and standards of geodesy and geographic information;
- when required, continues to support the needs of established user communities by maintaining backwards compatibility with the previous edition of this document (ISO 6709:2008);
- reduces the cost of interchange of data;
- reduces the delay in converting non-standard coding structures in preparation for interchange by providing advance knowledge of the standard interchange format; and
- provides flexible support for geographic point representation.

iTeh STANDARD PREVIEW
(standards.iteh.ai)

SIST EN ISO 6709:2023

<https://standards.iteh.ai/catalog/standards/sist/be457daa-9124-493c-8053-f3d75965db7c/sist-en-iso-6709-2023>