



MALAYSIAN STANDARD

**MS ISO 6709:2009
(CONFIRMED:2015)**

Standard representation of Geographic point location by coordinates (ISO 6709:2008, IDT)

ISO 6709:2008 is endorsed as Malaysian Standard with the reference number MS ISO 6709:2009.

ICS: 35.040

Descriptors: geographic Information, latitude, longitude, geographic point location

NOTE. This Malaysian Standard has been reviewed and confirmed as being current.

© Copyright 2009

DEPARTMENT OF STANDARDS MALAYSIA

DEVELOPMENT OF MALAYSIAN STANDARDS

The **Department of Standards Malaysia (STANDARDS MALAYSIA)** is the national standards and accreditation body of Malaysia.

The main function of STANDARDS MALAYSIA is to foster and promote standards, standardisation and accreditation as a means of advancing the national economy, promoting industrial efficiency and development, benefiting the health and safety of the public, protecting the consumers, facilitating domestic and international trade and furthering international cooperation in relation to standards and standardisation.

Malaysian Standards (MS) are developed through consensus by committees which comprise balanced representation of producers, users, consumers and others with relevant interests, as may be appropriate to the subject at hand. To the greatest extent possible, Malaysian Standards are aligned to or are adoption of international standards. Approval of a standard as a Malaysian Standard is governed by the Standards of Malaysia Act 1996 [Act 549]. Malaysian Standards are reviewed periodically. The use of Malaysian Standards is voluntary except in so far as they are made mandatory by regulatory authorities by means of regulations, local by-laws or any other similar ways.

For the purposes of Malaysian Standards, the following definitions apply:

Revision: A process where existing Malaysian Standard is reviewed and updated which resulted in the publication of a new edition of the Malaysian Standard.

Confirmed MS: A Malaysian Standard that has been reviewed by the responsible committee and confirmed that its contents are current.

Amendment: A process where a provision(s) of existing Malaysian Standard is altered. The changes are indicated in an amendment page which is incorporated into the existing Malaysian Standard. Amendments can be of technical and/or editorial nature.

Technical corrigendum: A corrected reprint of the current edition which is issued to correct either a technical error or ambiguity in a Malaysian Standard inadvertently introduced either in drafting or in printing and which could lead to incorrect or unsafe application of the publication.

NOTE: Technical corrigenda are not to correct errors which can be assumed to have no consequences in the application of the MS, for example minor printing errors.

STANDARDS MALAYSIA has appointed **SIRIM Berhad** as the agent to develop, distribute and sell Malaysian Standards.

For further information on Malaysian Standards, please contact:

Department of Standards Malaysia
Ministry of Science, Technology and Innovation
Level 1 & 2, Block 2300, Century Square
Jalan Usahawan
63000 Cyberjaya
Selangor Darul Ehsan
MALAYSIA

Tel: 60 3 8318 0002
Fax: 60 3 8319 3131
<http://www.jsm.gov.my>
E-mail: central@jsm.gov.my

OR **SIRIM Berhad**
(Company No. 367474 - V)
1, Persiaran Dato' Menteri
Section 2, P. O. Box 7035
40700 Shah Alam
Selangor Darul Ehsan
MALAYSIA

Tel: 60 3 5544 6000
Fax: 60 3 5510 8095
<http://www.sirim.my>
E-mail: msonline@sirim.my

Committee representation

The Industry Standards Committee on Information Technology, Telecommunication and Multimedia (ISC G) under whose authority this Malaysian Standard was adopted, comprises representatives from the following organisations:

Association of Consulting Engineers Malaysia
Department of Standards Malaysia
Federation of Malaysian Manufacturers
Institut Tadbiran Awam Negara, Malaysia
Malaysian Administrative, Modernisation and Management Planning Unit
Malaysian International Chamber of Commerce and Industry
Malaysian National Computer Confederation
Malaysian Technical Standards Forum Berhad
MIMOS Berhad
Ministry of Domestic Trade and Consumer Affairs
Ministry of Energy, Water and Communications
Ministry of International Trade and Industry
Ministry of Science, Technology and Innovation
Multimedia Development Corporation Sdn Bhd
Multimedia University
Science and Technology Research Institute for Defence
SIRIM Berhad (Secretariat)
Suruhanjaya Komunikasi dan Multimedia Malaysia
Telekom Malaysia Berhad
The Institution of Engineers, Malaysia
The National ICT Association of Malaysia
Universiti Teknologi Malaysia

The Technical Committee on Geographic Information/Geomatics which recommended the adoption of the ISO Standard consists of representatives from the following organisations:

Department of Agriculture, Malaysia
Department of Survey and Mapping Malaysia
ESRI South Asia Sdn Bhd
GeoInfo Services Sdn Bhd
Jabatan Kerja Raya Malaysia
Jabatan Perancangan Bandar dan Desa
Malaysian Agricultural Research and Development Institute
Pusat Infrastruktur Data Geospasial Negara
Pusat Remote Sensing Malaysia
SIRIM Berhad (Secretariat)
Universiti Malaya
Universiti Sains Malaysia
Universiti Teknologi Malaysia
Universiti Teknologi MARA

NATIONAL FOREWORD

The adoption of the ISO Standard as a Malaysian Standard was recommended by the Technical Committee on Geographic Information/Geomatics under the authority of the Industry Standards Committee on Information Technology, Telecommunication and Multimedia.

This Malaysian Standard is identical with ISO 6709:2008, *Standard representation of geographic point location by coordinates*, published by the International Organization for Standardization (ISO). However, for the purposes of this Malaysian Standard, the following apply:

- a) in the source text, "this International Standard" should read "this Malaysian Standard";
- b) the comma which is used as a decimal sign (if any), to read as a point; and
- c) reference to International Standards should be replaced by equivalent Malaysian Standards as follows:

<u>Referenced International Standards</u>	<u>Corresponding Malaysian Standards</u>
ISO/TS 19103, <i>Geographic information - Conceptual schema language</i>	MS ISO/TS 19103, <i>Geographic information - Conceptual schema language</i>
ISO 19107, <i>Geographic information - Spatial schema</i>	MS ISO 19107, <i>Geographic information - Spatial schema</i>
ISO 19111:2007, <i>Geographic information - Spatial referencing by coordinates</i>	MS ISO 19111:2007, <i>Geographic information - Spatial referencing by coordinates</i>
ISO 19115:2003, <i>Geographic information - Metadata</i>	MS ISO 19115:2003, <i>Geographic information - Metadata</i>
ISO 19118, <i>Geographic information - Encoding</i>	MS ISO 19118, <i>Geographic information - Encoding</i>
ISO/TS 19127, <i>Geographic information - Geodetic codes and parameters</i>	MS ISO/TS 19127, <i>Geographic information - Geodetic codes and parameters</i>
ISO 19133, <i>Geographic Information - Location based services - Tracking and navigation</i>	MS ISO 19133, <i>Geographic information - Location based services - Tracking and navigation</i>

NATIONAL FOREWORD *(continued)*

Compliance with a Malaysian Standard does not of itself confer immunity from legal obligations.

NOTE. IDT on the front cover indicates an identical standard i.e. a standard where the technical content, structure, wording (or is an identical translation) of a Malaysian Standard is exactly the same as in an International Standard or is identical in technical content and structure although it may contain the minimal editorial changes specified in clause 4.2 of ISO/IEC Guide 21-1.

**Standard representation of geographic
point location by coordinates**

*Représentation normalisée des latitude, longitude et altitude pour la
localisation des points géographiques*



PDF disclaimer

This PDF file may contain embedded typefaces. In accordance with Adobe's licensing policy, this file may be printed or viewed but shall not be edited unless the typefaces which are embedded are licensed to and installed on the computer performing the editing. In downloading this file, parties accept therein the responsibility of not infringing Adobe's licensing policy. The ISO Central Secretariat accepts no liability in this area.

Adobe is a trademark of Adobe Systems Incorporated.

Details of the software products used to create this PDF file can be found in the General Info relative to the file; the PDF-creation parameters were optimized for printing. Every care has been taken to ensure that the file is suitable for use by ISO member bodies. In the unlikely event that a problem relating to it is found, please inform the Central Secretariat at the address given below.

Preview Only



COPYRIGHT PROTECTED DOCUMENT

© ISO 2008

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from either ISO at the address below or ISO's member body in the country of the requester.

ISO copyright office
Case postale 56 • CH-1211 Geneva 20
Tel. + 41 22 749 01 11
Fax + 41 22 749 09 47
E-mail copyright@iso.org
Web www.iso.org

Published in Switzerland

Contents

Page

Foreword.....	iv
Introduction	v
1 Scope	1
2 Conformance	1
3 Normative references	1
4 Terms and definitions.....	2
5 Abbreviated terms	3
6 Requirements for the representation of geographic point location	3
6.1 Conceptual model for geographic point locations.....	3
6.2 Elements required for geographic point location	5
6.3 Coordinate Reference System identification	5
6.4 Representation of horizontal position	5
6.5 Representation of vertical position.....	6
6.6 Coordinate resolution.....	6
6.7 Utilization of geographic point locations	6
7 Representation of geographic point location	6
7.1 UML model.....	6
7.2 XML representation	6
7.3 Text string representation	7
Annex A (normative) Conformance and abstract test suite	8
Annex B (informative) Latitude and longitude coordinates are not unique	10
Annex C (normative) UML description for representation of geographic point locations	12
Annex D (informative) Representation of latitude and longitude at the human interface	17
Annex E (informative) Latitude and longitude resolution	19
Annex F (informative) Utilization of Geographic Point Locations.....	20
Annex G (informative) Examples of XML representation	23
Annex H (informative) Text string representation of point location.....	25
Bibliography	28

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.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

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.

ISO 6709 was prepared by Technical Committee ISO/TC 211, *Geographic information/Geomatics*.

This second edition cancels and replaces the first edition (ISO 6709:1983), which has been technically revised.

The first edition provided for the representation of latitude and longitude for geographic point locations. This second edition extends the use of the representation to applications requiring latitude or longitude values to be quoted separately, for example when quoting a difference in two meridian values. It also extends the representation of latitude and longitude to allow the values for each to be held in separate numeric fields.

This second edition additionally provides for the representation of horizontal point location by coordinates other than latitude and longitude, and makes provisions for a variable-length format which has the flexibility to cover these various requirements. It also includes provisions for heights and depths.

This second edition is primarily intended for data interchange between computer systems. Informative Annex D, which summarises the different requirements at the human interface, has been added.

The first edition used the term *altitude* to describe vertical position. This International Standard uses the more general term height and also allows for vertical location to be described as *depth*.