

EXPERT
REPORT

OIML E 5
6th Edition 2015 (E)

Overview of the present status of the standards
referred to in OIML D 11:2013
*General requirements for measuring instruments –
Environmental conditions*

Revue du statut actuel des normes référencées dans le Document OIML D 11:2013
Exigences générales pour les instruments de mesure – Conditions environnementales



Foreword

The International Organization of Legal Metrology (OIML) is a worldwide, intergovernmental organization whose primary aim is to harmonize the regulations and metrological controls applied by the national metrological services, or related organizations, of its Member States. The main categories of OIML publications are:

- **International Recommendations (OIML R)**, which are model regulations that establish the metrological characteristics required of certain measuring instruments and which specify methods and equipment for checking their conformity. OIML Member States shall implement these Recommendations to the greatest possible extent;
- **International Documents (OIML D)**, which are informative in nature and which are intended to harmonize and improve work in the field of legal metrology;
- **International Guides (OIML G)**, which are also informative in nature and which are intended to give guidelines for the application of certain requirements to legal metrology; and
- **International Basic Publications (OIML B)**, which define the operating rules of the various OIML structures and systems.

OIML Draft Recommendations, Documents and Guides are developed by Project Groups linked to Technical Committees or Subcommittees which comprise representatives from OIML Member States. Certain international and regional institutions also participate on a consultation basis. Cooperative agreements have been established between the OIML and certain institutions, such as ISO and the IEC, with the objective of avoiding contradictory requirements. Consequently, manufacturers and users of measuring instruments, test laboratories, etc. may simultaneously apply OIML publications and those of other institutions.

International Recommendations, Documents, Guides and Basic Publications are published in English (E) and translated into French (F) and are subject to periodic revision.

Additionally, the OIML publishes or participates in the publication of **Vocabularies (OIML V)** and periodically commissions legal metrology experts to write **Expert Reports (OIML E)**. Expert Reports are intended to provide information and advice, and are written solely from the viewpoint of their author, without the involvement of a Technical Committee or Subcommittee, nor that of the CIML. Thus, they do not necessarily represent the views of the OIML.

This publication – referred to as OIML E 5 – was produced by the secretariat of OIML TC 5/SC 1 *Environmental conditions* which is responsible for drafting OIML D 11. This sixth edition relates to OIML D 11:2013 whereas the previous editions referred to OIML D 11:2004.

The Netherlands is responsible for the secretariat of OIML TC 5/SC 1. Mr. George M. Teunisse (gteunisse@verispect.nl), who is assigned by the CIML Member for the Netherlands to coordinate OIML activities in his country, is its secretary.

OIML Publications may be downloaded from the OIML website in the form of PDF files. Additional information on OIML Publications may be obtained from the Organization's headquarters:

Bureau International de Métrologie Légale
11, rue Turgot - 75009 Paris - France
Telephone: 33 (0)1 48 78 12 82
Fax: 33 (0)1 42 82 17 27
E-mail: biml@oiml.org
Internet: www.oiml.org

**Overview of the present status of the Standards
referred to in OIML D 11:2013**
General requirements for measuring instruments; Environmental conditions

*George M. Teunisse, Verispect B.V., The Netherlands
OIML TC 5/SC 1 Secretariat*

1 Introduction

Following a suggestion by participants in the meeting of OIML TC 5/SC 1 held on 21–22 October 2002 in Delft, the original author of this report Mr. Gep Engler published – in his capacity of secretary of OIML TC 5/SC 1 – an overview of the status at that time of the ISO and IEC Standards referred to in OIML D 11 in OIML Bulletin Volume XLVI, Number 4, October 2005.

In this way, OIML TC/SC members were informed about changes without having to wait for an official revision of OIML D 11:2004. Such updated information may assist OIML Project Groups in drafting OIML Recommendations, so as to comply with the statement in OIML D 11:2004 which is maintained at the beginning of Annex D of OIML D 11:2013:

“All normative documents are subject to revision, and the users of this Document are encouraged to investigate the possibility of applying the most recent editions of the normative documents indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.”

In the meantime, since the publication of the initial Bulletin article, many standards referred to in OIML D 11 have been revised or replaced. It therefore was decided, after consultation with the BIML, that the secretariat of OIML TC 5/SC 1 would provide a regularly updated overview of changes in the standards referred to in OIML D 11 and it was concluded that publication in the format of an Expert Report on the OIML website would be most appropriate. This provides an easy means for updating the publication at any moment. The result is the publication of Expert Report E 5 of which the first edition was published in 2006 and which referred to OIML D 11: 2004. While updating standards is a continuous process, it was deemed appropriate in 2008 to review this publication. Subsequent editions were published in 2008, 2010, 2012 and 2013. All of these referred to the 2004 edition of OIML D 11.

In 2013 a revision of OIML D 11 was published in which the references to the standards were updated. Again, since then, some of the referred standards have been revised or replaced. This (sixth) edition of OIML E 5 provides information on these latest revisions.

It is the intention of the author to update this publication as regularly as possible; new editions will be announced in the OIML Bulletin and on the OIML website.

It should, however, be stressed that the information given in this report is merely an overview of the situation at the time of publication, and – due to the fact that it has been approved neither by TC 5/SC 1 (or even discussed in this subcommittee), nor by the CIML – it is

published for information purposes only and does not have the status of a formal addendum to OIML D 11:2013.

The new editions of the standards have not been reviewed in depth for their contents, so it is up to OIML Project Groups to review and decide on whether the latest edition(s) apply to their draft OIML Recommendations and Documents.

The information in the tables below is based on the following websites (situation as on 15 September 2015):

IEC Standards: http://www.iec.ch/searchpub/cur_fut.htm

ISO Standards: http://www.iso.org/iso/iso_catalogue.htm

In most cases, the text is an exact copy of the text supplied by ISO and IEC on their websites.

The quoted corrigenda to the IEC Standards and previews of all IEC standards may be downloaded free of charge from the IEC website at: http://www.iec.ch/searchpub/cur_fut.htm

The contents of the column "Major technical changes" are, as far as available, based on the information on the websites of ISO and IEC and/or published in the relevant new standard. This applies for both the English and the French texts; so the texts in both these languages have not been compared by the author.

2 Revised referred publications

The table below presents only those standards referred to in OIML D 11 which have been revised between the publication of OIML D 11 in 2013 and 15 September 2015.

For ease of readability, all the titles of the Standards referred to in this publication are presented in *italics*.

Ref. in D 11	Standard referred to in OIML D 11: 2013	Actual edition	Title and actual description of the standard	Major changes
[3]	IEC 60068-1:2013	Edition 7.0 2013-10-07	<i>Environmental testing - Part 1: General and guidance</i> This part of IEC 60068 includes a series of methods for environmental testing along with their appropriate test levels, and prescribes various atmospheric conditions for measurements and tests designed to assess the ability of specimens to perform under expected conditions of transportation, storage and all aspects of operational use. Although primarily intended for electrotechnical products, this standard is not restricted to these products only and may be used in other fields where desired. Other methods of environmental testing, specific to the individual types of specimen, may be included in the relevant specifications. The framework of environmental test tailoring process is given in order to assist the production of test specifications with appropriate tests and test level.	This seventh edition cancels and replaces the sixth edition, published in 1988, and constitutes a technical revision. The main changes with respect to the previous edition are listed below: <ul style="list-style-type: none"> ▪ updated normative reference list; ▪ indication of normative and informative annexes; ▪ new informative Annex C, Environmental test tailoring.
[19]	IEC 60529:1989 +AMD1:1999 +AMD2:2013 CSV	Edition 2.2 2013-08-29	<i>Degrees of protection provided by enclosures (IP Code)</i> This standard IEC 60529:1989+A1:1999+A2:2013 Applies to the classification of degrees of protection provided by enclosures for electrical equipment with a rated voltage not exceeding 72,5 kV.	The contents of the corrigenda of January 2003, September 2007, October 2009, October 2013 and May 2015 have been included in this copy. This consolidated version consists of the second edition (1989), its amendment 1 (1999) and its amendment 2 (2013).
	IEC 60529:1989 +AMD1:1999 +AMD2:2013 CSV /COR1:2013	Edition 2.2 Corrigendum 1 2013-10-15	Corrigendum 1 - <i>Degrees of protection provided by enclosures (IP Code)</i>	
	IEC 60529:1989 +AMD1:1999 +AMD2:2013 CSV /COR2:2015	Edition 2.2 Corrigendum 2 2015-05-11	Corrigendum 2 - <i>Degrees of protection provided by enclosures (IP Code)</i>	

Ref. in D 11	Standard referred to in OIML D 11: 2013	Actual edition	Title and actual description of the standard	Major changes
[31]	IEC 61000-4-5:2014	Edition 3.0 2014-05-15	<p><i>Electromagnetic compatibility (EMC) - Part 4-5: Testing and measurement techniques - Surge immunity test</i></p> <p>This section of IEC 61000-4 relates to the immunity requirements, test methods, and range of recommended test levels for equipment with regard to unidirectional surges caused by over-voltages from switching and lightning transients. Several test levels are defined which relate to different environment and installation conditions. These requirements are developed for and are applicable to electrical and electronic equipment. The object of this standard is to establish a common reference for evaluating the immunity of electrical and electronic equipment when subjected to surges. The test method documented describes a consistent method to assess the immunity of an equipment or system against a defined phenomenon. This standard defines a range of:</p> <ul style="list-style-type: none"> ▪ test levels; ▪ test equipment; ▪ test setups; and ▪ test procedures. <p>The task of the described laboratory test is to find the reaction of the equipment under test (EUT) under specified operational conditions to surge voltages caused by switching and lightning effects. It is not intended to test the capability of the EUT's insulation to withstand high-voltage stress. Direct injections of lightning currents, i.e. direct lightning strikes, are not considered in this standard.</p>	<p>This third edition cancels and replaces the second edition published in 2005, and constitutes a technical revision which includes the following significant technical changes with respect to the previous edition:</p> <ul style="list-style-type: none"> ▪ a new Annex E on mathematical modelling of surge waveforms; ▪ a new Annex F on measurement uncertainty; ▪ a new Annex G on method of calibration of impulse measuring systems; and ▪ a new Annex H on coupling/decoupling surges to lines rated above 200 A. <p>Moreover while surge test for ports connected to outside telecommunication lines was addressed in 6.2 of the second edition (IEC 61000-4-5:2005), in this third edition (IEC 61000-4-5:2014) the normative Annex A is fully dedicated to this topic. In particular it gives the specifications of the 10/700 μs combined wave generator.</p>
[32]	IEC 61000-4-6:2013 /COR1:2015	Edition 4.0 Corrigendum 1 2015-06-12	<p>Corrigendum 1 - <i>Electromagnetic compatibility (EMC) - Part 4-6: Testing and measurement techniques - Immunity to conducted disturbances, induced by radio-frequency fields</i></p>	

Ref. in D 11	Standard referred to in OIML D 11: 2013	Actual edition	Title and actual description of the standard	Major changes
[37]	IEC 61000-4-19: 2014	Edition 1.0 2014-05-07	<p><i>Electromagnetic compatibility (EMC) - Part 4-19: Testing and measurement techniques - Test for immunity to conducted, differential mode disturbances and signalling in the frequency range 2 kHz to 150 kHz at a.c. power ports</i></p> <p>This section of IEC 61000-4 relates to the immunity requirements and test methods for electrical and electronic equipment to conducted, differential mode disturbances and signalling in the range 2 kHz up to 150 kHz at a.c. power ports. The object of this standard is to establish a common and reproducible basis for testing electrical and electronic equipment with the application of differential mode disturbances and signalling to a.c. power ports. This standard defines:</p> <ul style="list-style-type: none"> ▪ test waveforms; ▪ range of test levels; ▪ test equipment; ▪ test setup; ▪ test procedures and ▪ verification procedures. <p>These tests are intended to demonstrate the immunity of electrical and electronic equipment operating at a mains supply voltage up to 280 V (from phase to neutral or phase to earth, if no neutral is used) and a frequency of 50 Hz or 60 Hz when subjected to conducted, differential mode disturbances such as those originating from power electronics and power line communication systems.</p>	This is the first edition of IEC 61000-4-19