

SLOVENSKI STANDARD

SIST EN IEC 61010-2-061:2021

01-december-2021

Nadomešča:

SIST EN 61010-2-061:2015

Varnostne zahteve za električno opremo za meritve, nadzor in laboratorijsko uporabo - 2-061. del: Posebne zahteve za laboratorijske atomske spektrometre s termično atomizacijo in ionizacijo (IEC 61010-2-061:2018)

Safety requirements for electrical equipment for measurement, control and laboratory use - Part 2-061: Particular requirements for laboratory atomic spectrometers with thermal atomization and ionization (IEC 61010-2-061:2018)

Sicherheitsbestimmungen für elektrische Mess-, Steuer-, Regel- und Laborgeräte - Teil 2-061: Besondere Anforderungen an Labor-Atomspektrometer mit thermischer Atomisierung und Ionisation (IEC 61010-2-061:2018)

<https://standards.iteh.ai/catalog/standards/sist/a58105a2-e935-4eab-b261-52d8bdceac88/sist-en-iec-61010-2-061-2021>

Règles de sécurité pour appareils électriques de mesurage, de régulation et de laboratoire - Partie 2-061: Exigences particulières pour spectromètres atomiques de laboratoire avec vaporisation et ionisation thermiques (IEC 61010-2-061:2018)

Ta slovenski standard je istoveten z: EN IEC 61010-2-061:2021

ICS:

19.080	Električno in elektronsko preskušanje	Electrical and electronic testing
71.040.10	Kemijski laboratoriji. Laboratorijska oprema	Chemical laboratories. Laboratory equipment

SIST EN IEC 61010-2-061:2021

en,fr,de

iTeh STANDARD PREVIEW
(standards.iteh.ai)

[SIST EN IEC 61010-2-061:2021](https://standards.iteh.ai/catalog/standards/sist/a58105a2-e935-4eab-b261-52d8bdceac88/sist-en-iec-61010-2-061-2021)

<https://standards.iteh.ai/catalog/standards/sist/a58105a2-e935-4eab-b261-52d8bdceac88/sist-en-iec-61010-2-061-2021>

EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

EN IEC 61010-2-061

September 2021

ICS 19.080; 71.040.20

Supersedes EN 61010-2-061:2015 and all of its
amendments and corrigenda (if any)

English Version

**Safety requirements for electrical equipment for measurement,
control and laboratory use - Part 2-061: Particular requirements
for laboratory atomic spectrometers with thermal atomization and
ionization
(IEC 61010-2-061:2018)**

Règles de sécurité pour appareils électriques de mesurage,
de régulation et de laboratoire - Partie 2-061: Exigences
particulières pour spectromètres atomiques de laboratoire
avec vaporisation et ionisation thermiques
(IEC 61010-2-061:2018)

Sicherheitsbestimmungen für elektrische Mess-, Steuer-,
Regel- und Laborgeräte -Teil 2-061: Besondere
Anforderungen an Labor-Atomspektrometer mit thermischer
Atomisierung und Ionisation
(IEC 61010-2-061:2018)

STANDARD PREVIEW
(standards.iteh.ai)

This European Standard was approved by CENELEC on 2018-10-26. CENELEC 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 CENELEC member.

<https://standards.iteh.ai/catalog/standards/sist/a58105a2-e935-4eab-b261-2021/iec-61010-2-061-2018>

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

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



European Committee for Electrotechnical Standardization
Comité Européen de Normalisation Electrotechnique
Europäisches Komitee für Elektrotechnische Normung

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

EN IEC 61010-2-061:2021 (E)**European foreword**

The text of document 66/643/CDV, future edition 4 of IEC 61010-2-061, prepared by IEC/TC 66 "Safety of measuring, control and laboratory equipment" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN IEC 61010-2-061:2021.

The following dates are fixed:

- latest date by which the document has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 2022-08-02
- latest date by which the national standards conflicting with the document have to be withdrawn (dow) 2024-08-02

This document supersedes EN 61010-2-061:2015 and all of its amendments and corrigenda (if any).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CENELEC shall not be held responsible for identifying any or all such patent rights.

This document has been prepared under a Standardization Request given to CENELEC by the European Commission and the European Free Trade Association, and supports essential requirements of EU Directive(s) / Regulation(s).

For the relationship with EU Directive(s) / Regulation(s), see Informative Annex ZZ, which is an integral part of EN IEC 61010-2-061:2021/A11:2021.

Any feedback and questions on this document should be directed to the users' national committee. A complete listing of these bodies can be found on the CENELEC website.

<https://standards.iteh.ai/catalog/standards/sist/a58105a2-e935-4eab-b261-52d8bdceac88/sist-en-iec-61010-2-061-2021>
 (standards.iteh.ai)

Endorsement notice

The text of the International Standard IEC 61010-2-061:2018 was approved by CENELEC as a European Standard without any modification.

In the official version, for Bibliography, the following notes have to be added for the standards indicated:

IEC 62061	NOTE	Harmonized as EN 62061
ISO 13849 (series)	NOTE	Harmonized as EN ISO 13849 (series)



IEC 61010-2-061

Edition 1.0 2018-09

INTERNATIONAL STANDARD

NORME INTERNATIONALE

GROUP SAFETY PUBLICATION
PUBLICATION GROUPEE DE SÉCURITÉ

**Safety requirements for electrical equipment for measurement, control, and laboratory use –
Part 2-061: Particular requirements for laboratory atomic spectrometers with thermal atomization and ionization**

<https://standards.iteh.ai/catalog/standards/sist/a58105a2-e935-4eab-b261-62018-2018-09-01/iec-61010-2-061-2021>

Exigences de sécurité pour appareils électriques de mesurage, de régulation et de laboratoire –

Partie 2-061: Exigences particulières pour spectromètres atomiques de laboratoire avec vaporisation et ionisation thermiques

INTERNATIONAL
ELECTROTECHNICAL
COMMISSION

COMMISSION
ELECTROTECHNIQUE
INTERNATIONALE

ICS 19.080; 71.040.20

ISBN 978-2-8322-6040-1

**Warning! Make sure that you obtained this publication from an authorized distributor.
Attention! Veuillez vous assurer que vous avez obtenu cette publication via un distributeur agréé.**

CONTENTS

FOREWORD.....	3
1 Scope and object.....	5
2 Normative references.....	5
3 Terms and definitions	5
4 Tests.....	6
5 Marking and documentation	6
6 Protection against electric shock.....	9
7 Protection against mechanical HAZARDS.....	9
8 Resistance to mechanical stresses.....	9
9 Protection against the spread of fire.....	10
10 Equipment temperature limits and resistance to heat.....	10
11 Protection against HAZARDS from fluids and solid foreign objects.....	10
12 Protection against radiation, including laser sources, and against sonic and ultrasonic pressure	11
13 Protection against liberated gases and substances, explosion and implosion	12
14 Components and subassemblies.....	13
15 Protection by interlocks.....	14
16 HAZARDS resulting from application.....	14
17 RISK assessment	14
Annexes	15
Annex A (normative) Routine tests.....	16
Annex L (informative) Index of defined terms.....	17
Bibliography	18
Figure 101 – Example of a GAS LOCK	12
Table 101 – Time-temperature conditions.....	9

INTERNATIONAL ELECTROTECHNICAL COMMISSION

**SAFETY REQUIREMENTS FOR ELECTRICAL EQUIPMENT FOR
MEASUREMENT, CONTROL, AND LABORATORY USE –****Part 2-061: Particular requirements for laboratory atomic
spectrometers with thermal atomization and ionization**

FOREWORD

- 1) The International Electrotechnical Commission (IEC) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of IEC is to promote international co-operation on all questions concerning standardization in the electrical and electronic fields. To this end and in addition to other activities, IEC publishes International Standards, Technical Specifications, Technical Reports, Publicly Available Specifications (PAS) and Guides (hereafter referred to as "IEC Publication(s)"). Their preparation is entrusted to technical committees; any IEC National Committee interested in the subject dealt with may participate in this preparatory work. International, governmental and non-governmental organizations liaising with the IEC also participate in this preparation. IEC collaborates closely with the International Organization for Standardization (ISO) in accordance with conditions determined by agreement between the two organizations.
- 2) The formal decisions or agreements of IEC on technical matters express, as nearly as possible, an international consensus of opinion on the relevant subjects since each technical committee has representation from all interested IEC National Committees.
- 3) IEC Publications have the form of recommendations for international use and are accepted by IEC National Committees in that sense. While all reasonable efforts are made to ensure that the technical content of IEC Publications is accurate, IEC cannot be held responsible for the way in which they are used or for any misinterpretation by any end user.
- 4) In order to promote international uniformity, IEC National Committees undertake to apply IEC Publications transparently to the maximum extent possible in their national and regional publications. Any divergence between any IEC Publication and the corresponding national or regional publication shall be clearly indicated in the latter.
- 5) IEC itself does not provide any attestation of conformity. Independent certification bodies provide conformity assessment services and, in some areas, access to IEC marks of conformity. IEC is not responsible for any services carried out by independent certification bodies.
- 6) All users should ensure that they have the latest edition of this publication.
- 7) No liability shall attach to IEC or its directors, employees, servants or agents including individual experts and members of its technical committees and IEC National Committees for any personal injury, property damage or other damage of any nature whatsoever, whether direct or indirect, or for costs (including legal fees) and expenses arising out of the publication, use of, or reliance upon, this IEC Publication or any other IEC Publications.
- 8) Attention is drawn to the Normative references cited in this publication. Use of the referenced publications is indispensable for the correct application of this publication.
- 9) Attention is drawn to the possibility that some of the elements of this IEC Publication may be the subject of patent rights. IEC shall not be held responsible for identifying any or all such patent rights.

International Standard IEC 61010-2-061 has been prepared by IEC technical committee 66: Safety of measuring, control and laboratory equipment.

It has the status of a group safety publication in accordance with IEC Guide 104.

This fourth edition cancels and replaces the third edition published in 2015. This edition constitutes a technical revision.

This edition includes the following significant technical changes with respect to the previous edition:

- a) adaptation of changes introduced by Amendment 1 of IEC 61010-1;
- b) added tolerance for stability of AC voltage test equipment to Clause 6;

- c) added requirement for interlock systems containing electric/electronic or programmable components to Clause 15.

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

CDV	Report on voting
66/643/CDV	66/668/RVC

Full information on the voting for the approval of this International Standard can be found in the report on voting indicated in the above table.

This document has been drafted in accordance with the ISO/IEC Directives, Part 2.

A list of all parts of the IEC 61010 series, under the general title, *Safety requirements for electrical equipment for measurement, control, and laboratory use*, may be found on the IEC website.

This Part 2-061 is intended to be used in conjunction with IEC 61010-1. It was established on the basis of the third edition (2010) and its Amendment 1 (2016).

This Part 2-061 supplements or modifies the corresponding clauses in IEC 61010-1 so as to convert that publication into the IEC standard: *Particular requirements for laboratory atomic spectrometers with thermal atomization and ionization*.

Where a particular subclause of Part 1 is not mentioned in this Part 2, that subclause applies as far as is reasonable. Where this part states “addition”, “modification” or “replacement”, or “deletion”, the relevant requirement, test specification or note in Part 1 should be adapted accordingly.

<https://standards.iteh.ai/catalog/standards/sist/a58105a2-e935-4eab-b261-52d8bdceac88/sist-en-iec-61010-2-061-2021>

In this standard:

- 1) the following print types are used:
 - requirements: in roman type;
 - NOTES: in small roman type;
 - *conformity and test: in italic type*;
 - terms used throughout this standard which have been defined in Clause 3: SMALL ROMAN CAPITALS;
- 2) subclauses, figures, tables and notes which are additional to those in Part 1 are numbered starting from 101. The additional annexes are lettered starting from AA and additional list items are lettered from aa).

The committee has decided that the contents of this document will remain unchanged until the stability date indicated on the IEC website under "http://webstore.iec.ch" in the data related to the specific document. At this date, the document will be

- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
- amended.

SAFETY REQUIREMENTS FOR ELECTRICAL EQUIPMENT FOR MEASUREMENT, CONTROL, AND LABORATORY USE –

Part 2-061: Particular requirements for laboratory atomic spectrometers with thermal atomization and ionization

1 Scope and object

This clause of Part 1 is applicable except as follows:

1.1 Scope

1.1.1 Equipment included in scope

Replacement:

Replace the text, except the first paragraph, with the following new text:

This part of IEC 61010 applies to electrically powered laboratory atomic spectrometers with thermal atomization.

NOTE 1 Examples include atomic absorption spectrometers, emission flame photometers, atomic fluorescence spectrophotometers, inductively coupled plasma spectrometers, microwave coupled plasma spectrometers and mass spectrometers, all with thermal atomization and ionization (including tubing and connectors which are provided by the manufacturer for connection to external supplies).

NOTE 2 If all or part of the equipment falls within the scope of one or more other Part 2 documents of IEC 61010 as well as within the scope of this document, consideration is given to those other Part 2 documents.

1.1.2 Equipment excluded from scope

Addition:

Add, before the first paragraph, the following new text:

This document does not apply to thermal atomization detectors (flame ionization detectors) used in gas chromatography.

2 Normative references

This clause of Part 1 is applicable.

3 Terms and definitions

This clause of Part 1 is applicable except as follows:

Addition:

Add the following new terms:

3.2.101

SPRAY CHAMBER

chamber in which droplets of sample in aerosol are allowed to separate so that the droplets of necessary size can be passed onward to the burner, with the remainder draining to waste

3.2.102**GAS LOCK**

device to allow drainage of waste sample liquid, and to prevent unintentional escape of gas from the SPRAY CHAMBER through its drain outlet

Note 1 to entry: See for example Figure 101.

3.5.101**FLASH-BACK**

event during which the flame travels back through the burner with the result that the gas in the mixing chamber is caused to ignite

4 Tests

This clause of Part 1 is applicable except as follows:

Addition:

Add the following new subclauses:

4.4.2.101 Sampling probe tip

Any system designed to withdraw a sampling probe tip after sampling has been completed shall be overridden, so as to leave the tip in its most exposed position when a sample vessel is removed.

Exceptions:

The withdrawal system need not be overridden if the sampling probe:

- a) cannot cause a HAZARD to the OPERATOR when it is exposed;
- b) is designed in such a manner that no SINGLE FAULT CONDITION can cause the tip to remain exposed after sampling has been completed.

4.4.2.102 Failure, or partial failure, of the MAINS supply

The voltage of the power supply to the equipment from the MAINS supply shall first be reduced to just less than 90 % of the RATED voltage, and shall then be switched off.

5 Marking and documentation

This clause of Part 1 is applicable except as follows:

Addition:

Add the following new subclause:

5.1.5.101 Gas and liquid connections

The following shall be unambiguously marked adjacent to the connector on the equipment (see 5.2):

- a) the identity of the gas or liquid;
- b) the maximum permitted pressure;
- c) flow direction of the gas and liquid, if applicable.

NOTE Such markings can be specific (for example acetylene, propane, water) or generic (for example fuel gas, oxidant gas, coolant, waste liquid).

Where no internationally recognized symbol (such as a chemical formula) exists, the equipment shall be marked with symbol 14 of Table 1 together with an unambiguous text in English. The documentation accompanying the equipment shall provide an adequate translation of this text (where it is required) in the language of the country in which it is to be installed, to assure that the installer or OPERATOR is able to connect the equipment correctly.

Conformity is checked by inspection.

5.2 Warning markings

Addition:

Add the following new paragraph before the conformity statement:

Where hot gases or plasma emerge from equipment, the protective structure provided (for example a chimney, see 10.1), shall be clearly marked by symbol 13 of Table 1, to indicate where excessively hot temperatures can exist.

5.4.3 Equipment installation

Addition:

Add, before the first paragraph, the following new paragraph:

The documentation shall state that the RESPONSIBLE BODY shall ensure that the type of connector used at the outlet side of the gas-pressure regulator conforms to applicable national requirements.

Deletion:

Delete item f).

Addition:

Add, after item g) and before the note, the following new items:

- aa) requirements for liquid connection;
- bb) requirements for a fume extraction system to remove exhaust gases which may be hazardous. In the case of equipment using only a propane flame in a ventilated room, and when it is known that samples will not leave any hazardous residues, it is not necessary to provide an extraction system, since the exhaust gases from a propane flame will themselves not present any HAZARD;
- cc) requirements for appropriate filtering or other systems which may be necessary to trap hazardous sample residues present in the exhaust gas stream;
- dd) documentation stating that the RESPONSIBLE BODY shall carry out appropriate leakage tests necessary for safety on those gas and liquid connections which the OPERATOR is directed to assemble during installation, NORMAL USE, or maintenance;
- ee) instructions for examining, during installation and maintenance, parts of the external gas supply system including tubing connected to the equipment, in order to confirm that their condition is satisfactory, for example to detect stress cracks. In addition any special national regulations for the safe use of gases and gas cylinders shall be observed;