



BSI Standards Publication

Electromechanical switches for use in electrical and electronic equipment

Part 1: Generic specification

National foreword

This British Standard is the UK implementation of EN IEC 61020-1:2019. It is identical to IEC 61020-1:2019. It supersedes BS EN 61020-1:2009, which will be withdrawn on 20 February 2022.

The UK participation in its preparation was entrusted to Technical Committee PEL/23, Electrical accessories.

A list of organizations represented on this committee can be obtained on request to its secretary.

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English Version

**Electromechanical switches for use in electrical and electronic
equipment - Part 1: Generic specification
(IEC 61020-1:2019)**

Interrupteurs électromécaniques pour équipements
électriques et électroniques - Partie 1: Spécification
générique
(IEC 61020-1:2019)

Elektromechanische Schalter zur Verwendung in Geräten
der Elektrotechnik und Elektronik - Teil 1:
Fachgrundspezifikation
(IEC 61020-1:2019)

This European Standard was approved by CENELEC on 2019-02-20. 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.

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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

European foreword

The text of document 23J/443/CDV, future edition 3 of IEC 61020-1, prepared by SC 23J "Switches for appliances" of IEC/TC 23 "Electrical accessories" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN IEC 61020-1:2019.

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) 2019-11-20
- latest date by which the national standards conflicting with the document have to be withdrawn (dow) 2022-02-20

This document supersedes EN 61020-1:2009.

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.

Endorsement notice

The text of the International Standard IEC 61020-1:2019 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 60062:2016	NOTE	Harmonized as EN 60062:2016 (not modified)
IEC 60065	NOTE	Harmonized as EN 60065
IEC 60068-3-13	NOTE	Harmonized as EN 60068-3-13
IEC 60512 (series)	NOTE	Harmonized as EN IEC 60512 (series)
IEC 60664-1	NOTE	Harmonized as EN 60664-1
IEC 60695-11-10	NOTE	Harmonized as EN 60695-11-10
IEC 61190-1-3	NOTE	Harmonized as EN IEC 61190-1-3
ISO/IEC 17050-1	NOTE	Harmonized as EN ISO/IEC 17050-1
ISO/IEC 17050-2	NOTE	Harmonized as EN ISO/IEC 17050-2
ISO 129-1	NOTE	Harmonized as EN ISO 129-1 ¹
ISO 286-1	NOTE	Harmonized as EN ISO 286-1
ISO 1101	NOTE	Harmonized as EN ISO 1101
ISO 9001	NOTE	Harmonized as EN ISO 9001

¹ Under preparation. Stage at the time of publication: prEN ISO 129-1:2018.

Annex ZA
(normative)

**Normative references to international publications
with their corresponding European publications**

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

NOTE 1 Where an International Publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

NOTE 2 Up-to-date information on the latest versions of the European Standards listed in this annex is available here: www.cenelec.eu.

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 60027	series	Letter symbols to be used in electrical technology	EN IEC 60027	series
IEC 60050-581	-	International Electrotechnical Vocabulary - Part 581: Electromechanical components for electronic equipment	-	-
IEC 60068-1	2013	Environmental testing - Part 1: General and guidance	EN 60068-1	2014
IEC 60068-2-1	-	Environmental testing - Part 2-1: Tests - Test A: Cold	EN 60068-2-1	-
IEC 60068-2-2	-	Environmental testing - Part 2-2: Tests - Test B: Dry heat	EN 60068-2-2	-
IEC 60068-2-6	-	Environmental testing - Part 2-6: Tests - Test Fc: Vibration (sinusoidal)	EN 60068-2-6	-
IEC 60068-2-10	-	Environmental testing - Part 2-10: Tests - Test J and guidance: Mould growth	EN 60068-2-10	-
IEC 60068-2-11	-	Basic environmental testing procedures - Part 2-11: Tests - Test Ka: Salt mist	EN 60068-2-11	-
IEC 60068-2-13	-	Basic environmental testing procedures - Part 2-13: Tests - Test M: Low air pressure	EN 60068-2-13	-
IEC 60068-2-14	-	Environmental testing - Part 2-14: Tests - Test N: Change of temperature	EN 60068-2-14	-
IEC 60068-2-17	-	Basic environmental testing procedures - Part 2-17: Tests - Test Q: Sealing	EN 60068-2-17	-
IEC 60068-2-20	2008	Environmental testing - Part 2-20: Tests - Test T: Test methods for solderability and resistance to soldering heat of devices with leads	EN 60068-2-20	2008
IEC 60068-2-21	-	Environmental testing - Part 2-21: Tests - Test U: Robustness of terminations and integral mounting devices	EN 60068-2-21	-
IEC 60068-2-27	-	Environmental testing - Part 2-27: Tests - Test Ea and guidance: Shock	EN 60068-2-27	-

EN IEC 61020-1:2019 (E)

IEC 60068-2-30	2005	Environmental testing - Part 2-30: Tests - Test Db: Damp heat, cyclic (12 h + 12 h cycle)	EN 60068-2-30	2005
IEC 60068-2-38	2009	Environmental testing - Part 2-38: Tests - Test Z/AD: Composite temperature/humidity cyclic test	EN 60068-2-38	2009
IEC 60068-2-42	-	Environmental testing - Part 2-42: Tests - Test Kc: Sulphur dioxide test for contacts and connections	EN 60068-2-42	-
IEC 60068-2-43	-	Environmental testing - Part 2-43: Tests - Test Kd: Hydrogen sulphide test for contacts and connections	EN 60068-2-43	-
IEC 60068-2-45	-	Basic environmental testing procedures - Part 2-45: Tests - Test XA and guidance: Immersion in cleaning solvents	EN 60068-2-45	-
IEC 60068-2-46	-	Basic environmental testing procedures - Part 2-46: Tests - Guidance to test Kd: Hydrogen sulphide test for contacts and connections	HD 323.2.46 S1	-
IEC 60068-2-49	-	Basic environmental testing procedures - Part 2-49: Tests - Guidance to test Kc: Sulphur dioxide test for contacts and connections	-	-
IEC 60068-2-58	2015	Environmental testing - Part 2-58: Tests - Test Td: Test methods for solderability, resistance to dissolution of metallization and to soldering heat of surface mounting devices (SMD)	EN 60068-2-58	2015
+ A1	2017		+ A1	2018
IEC 60068-2-61	1991	Environmental testing - Part 2-61: Test methods - Test Z/ABDM: Climatic sequence	EN 60068-2-61	1993
IEC 60068-2-68	1994	Environmental testing - Part 2-68: Tests - Test L: Dust and sand	EN 60068-2-68	1996
IEC 60068-2-77	-	Environmental testing - Part 2-77: Tests - Test 77: Body strength and impact shock	EN 60068-2-77	-
IEC 60068-2-78	-	Environmental testing - Part 2-78: Tests - Test Cab: Damp heat, steady state	EN 60068-2-78	-
IEC 60529	-	Degrees of protection provided by enclosures (IP Code)	-	-
IEC 60617	-	Graphical symbols for diagrams (available at: http://std.iec.ch/iec60617)	-	-
IEC 60721-3-3	-	Classification of environmental conditions - Part 3: Classification of groups of environmental parameters and their severities - Section 3: Stationary use at weather protected locations	EN 60721-3-3	-
IEC 61058-1	2016	Switches for appliances - Part 1: General requirements	EN IEC 61058-1	2018
IEC 61058-1-1	2016	Switches for appliances - Part 1-1: Requirements for mechanical switches	EN 61058-1-1	2016
ISO 80000-1	-	Quantities and units - Part 1: General	-	-

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

**ELECTROMECHANICAL SWITCHES
FOR USE IN ELECTRICAL AND ELECTRONIC EQUIPMENT –****Part 1: Generic specification**

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.
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International Standard IEC 61020-1 has been prepared by subcommittee 23J: Switches for appliances, of IEC technical committee 23: Electrical accessories.

This third edition cancels and replaces the second edition published in 2009.

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

- a) In accordance with the ISO/IEC Directives, Part 2:2016, Clause 2 General has been replaced by two new clauses: Clause 2 Normative references and Clause 3 Terms, definitions, units and symbols.
2.4 Preferred values and 2.5 Marking have been moved to Clauses 5 and 6. In addition, 6.2 Markings on packaging has been added.
- b) Clause 3 Quality assurance procedures and Annex A have been deleted.
- c) 4.3.6.3 Returning force has been added.
- d) 4.3.6.4 Travel (movement of the actuator) has been added.
- e) 4.12 Environmental testing:

4.12.1.3 and 4.12.1.5 have been renumbered 4.12.2 and 4.12.3, respectively. 4.12.1.4 and 4.12.1.7 have been integrated in 4.12.5. 4.12.10 Salt mist has been added.

- f) Following publication of IEC 61058-1-1:2016, some cross-references to IEC 61058-1 have been updated.
- g) The following items have been updated with respect to the second edition.
- Tables and figures:
Tables 1 and 3 have been deleted, Table 4 has been renumbered to Table 10. New Tables 2, 3, 4, 5, 6, 7, 8 and 9 have been added.
Figure 1 has been renumbered to Figure 3, Figure 2 renumbered to Figure 4, Figure 3 renumbered to Figure 9 and Figure 4 renumbered to Figure 12. Added new Figures 1, 2, 5, 6, 7, 8, 10 and 11 have been added.
 - Specific words and common names have been unified.

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

CDV	Report on voting
23J/443/CDV	23J/448/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 in the IEC 61020 series, published under the general title *Electromechanical switches for use in electrical and electronic equipment*, can be found on the IEC website.

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.

INTRODUCTION

This document covers the general requirements and test methods for electromechanical switches with optional quality assurance procedures. It provides the general requirements and test methods for use in any detail specifications for pushbutton switches, rotary switches, sensitive switches, toggle switches, and other electromechanical switches.

Where it is intended that an electromechanical switch comply with requirements related to safety, the specific safety requirements will be specified in IEC 61058-1.

ELECTROMECHANICAL SWITCHES FOR USE IN ELECTRICAL AND ELECTRONIC EQUIPMENT –

Part 1: Generic specification

1 Scope

This part of IEC 61020 specifies the terminology, symbols, test methods and other necessary information to provide consistency in detail specifications for electromechanical switches.

This document relates to electromechanical switches intended for use in electrical and electronic appliances. Switches covered by this document:

- a) are devices which open, close, or change the connection of a circuit by the mechanical motion of conducting parts (contacts);
- b) have a maximum rated voltage of 480 V;
- c) have a maximum rated current of 63 A.

This document does not include keyboards and keypads which are intended for use in information-handling systems. Electromechanical key switches can be included under the scope of this document.

Switch families will be described in any detail specifications that reference this document.

This document is a performance standard intended to describe evaluation methods to better clarify the capabilities of a switch.

NOTE 1 Safety requirements for switches for household and similar fixed electrical installations are given in IEC 60669 (all parts).

NOTE 2 Safety requirements for appliance switches are given in IEC 61058 (all parts).

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

IEC 60027 (all parts), *Letter symbols to be used in electrical technology*

IEC 60050-581, *International Electrotechnical Vocabulary – Part 581: Electromechanical components for electronic equipment*

IEC 60068-1:2013, *Environmental testing – Part 1: General and guidance*

IEC 60068-2-1, *Environmental testing – Part 2-1: Tests – Test A: Cold*

IEC 60068-2-2, *Environmental testing – Part 2-2: Tests – Test B: Dry Heat*

IEC 60068-2-6, *Environmental testing – Part 2-6: Tests – Test Fc: Vibration (sinusoidal)*

IEC 60068-2-10, *Environmental testing – Part 2-10: Tests – Test J and guidance: Mould growth*