BS EN 62626-1:2014

BSI Standards Publication

Low-voltage switchgear and controlgear enclosed equipment

Part 1: Enclosed switch-disconnectors outside the scope of IEC 60947-3 to provide isolation during repair and maintenance work

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National foreword

This British Standard is the UK implementation of EN 62626-1:2014. It is identical to IEC 62626-1:2014.

The UK participation in its preparation was entrusted by Technical Committee PEL/17, Switchgear, controlgear, and HV-LV co-ordination, to Subcommittee PEL/17/2, Low voltage switchgear and controlgear.

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

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English Version

Low-voltage switchgear and controlgear enclosed equipment - Part 1: Enclosed switch-disconnectors outside the scope of IEC 60947-3 to provide isolation during repair and maintenance work (IEC 62626-1:2014)

Appareillage basse tension sous enveloppe - Partie 1: Interrupteur-sectionneur en coffret, en dehors du domaine d'application de la norme CEI 60947-3, destiné à garantir l'isolation pendant les phases de maintenance (CEI 62626-1:2014)

Gekapselte Niederspannungsschaltgeräte - Teil 1: Gekapselte Lasttrennschalter außerhalb des Anwendungsbereiches von IEC 60947-3, zum Trennen während der Reparatur- und Wartungsarbeit (IEC 62626-1:2014)

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Comité Européen de Normalisation Electrotechnique
Europäisches Komitee für Elektrotechnische Normung

CEN-CENELEC Management Centre: Avenue Marnix 17, B-1000 Brussels

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Foreword

The text of document 17B/1839A/FDIS, future edition 1 of IEC 62626-1, prepared by SC 17B "Low-voltage switchgear and controlgear" of IEC/TC 17 "Switchgear and controlgear" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN 62626-1:2014.

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)	2014-12-21
– latest date by which the national standards conflicting with the document have to be withdrawn	(dow)	2017-03-21

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

This standard covers the Principle Elements of the Safety Objectives for Electrical Equipment Designed for Use within Certain Voltage Limits (LVD - 2006/95/EC).

Endorsement notice

The text of the International Standard IEC 62626-1:2014 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 60204-1	NOTE	Harmonized as EN 60204-1.
IEC 60364-5-51	NOTE	Harmonized as HD 60364-5-51.
IEC 60529	NOTE	Harmonized as EN 60529.
IEC 60947-5-1	NOTE	Harmonized as EN 60947-5-1.
ISO 13850	NOTE	Harmonized as EN ISO 13850.

Annex ZA
(normative)
Normative references to international publications with their corresponding European publications

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

NOTE 1 When 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

Publication	Year	Title	EN/HD	Year
IEC 60050	series	International Electrotechnical Vocabulary	-	series
IEC 60947-1	2007	Low-voltage switchgear and controlgear	EN 60947-1	2007
A1	2010	Part 1: General rules		
IEC 60947-3	2008	Low-voltage switchgear and controlgear	EN 60947-3	2009
A1	2012	Part 3: Switches, disconnectors, switch-disconnectors and fuse-combination units	A1	2012
IEC 62262	2002	Degrees of protection provided by enclosures for electrical equipment against external mechanical impacts (IK code)	EN 62262	2002

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INTRODUCTION

Enclosed switch-disconnectors covered by this part of IEC 62626 are intended for use in various applications, to provide isolation of electrical equipment, especially motor circuits, during repair, cleaning and maintenance works.

Such enclosed switch-disconnectors are sometimes known as “maintenance switches”, or “safety switches”. The name “safety switch” is also used for safety related position switches, inspection switches and switches for other applications, which are not covered by this standard.

This part of IEC 62626 specifies additional requirements for enclosed switch-disconnectors according to IEC 60947-3 to provide isolation of electrical equipment during repair and maintenance work.

Enclosed switch-disconnectors according to this standard are mounted close to the equipment which has to be isolated and are usually operated by instructed persons.

NOTE 1 The term “safety switch” is not recognized in some countries as the same meaning given in this standard.

NOTE 2 Switch-disconnectors do not necessarily meet the requirements for prevention of unexpected start, especially if there are energy sources other than electrical.

LOW-VOLTAGE SWITCHGEAR AND CONTROLGEAR ENCLOSED EQUIPMENT –

Part 1: Enclosed switch-disconnectors outside the scope of IEC 60947-3 to provide isolation during repair and maintenance work

1 Scope

This part of IEC 62626 applies to enclosed switches-disconnectors with rated voltages up to 1 000 V a.c. for repair and maintenance work or cleaning work in load circuits. Devices within the scope of this standard are derived from switch-disconnectors according to IEC 60947-3. Enclosed switch-disconnectors in this standard are suitable for isolation according to IEC 60947 series and are not supposed to be equipped with means for remote control or automatic switching to avoid unexpected or accidental start. These devices are not intended to be used for operational switching, quick start and stop or jogging.

NOTE 1 However, these kind of devices can provide the possibility to switch off electrical equipment (even in a critical situation or not).

Devices within the scope of this standard provide isolation of electrical equipment, especially in motor circuits, during repair and maintenance or cleaning works.

Enclosed switch-disconnectors for various applications to provide isolation of electrical equipment during repair and maintenance work, named “maintenance switches”, are designated hereafter as devices with:

a) different classes;

b) characteristics of each class;

c) minimum test requirements;

d) information to be marked on the equipment or made available by the manufacturer, for example in the catalogue.

NOTE 2 This standard does not specify additional requirements that are necessary for the application of these switches, for example, in explosive atmospheres (e.g. ATEX in Europe).

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

IEC 60050 (all parts), *International electrotechnical vocabulary*. Available from: <http://www.electropedia.org/>

IEC 60947-1:2007, *Low-voltage switchgear and controlgear – Part 1: General rules*
Amendment 1:2010

IEC 60947-3:2008, *Low-voltage switchgear and controlgear – Part 3: Switches, disconnector, switch-disconnector and fuse-combination units*
Amendment 1:2012

IEC 62262:2002, *Degrees of protection provided by enclosures for electrical equipment against external mechanical impacts (IK code)*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in IEC 60050-441, IEC 60947-1, IEC 60947-3, as well as the following apply.

3.1
(mechanical) switch
mechanical switching device capable of making, carrying and breaking currents under normal circuit conditions which may include specified operating overload conditions and also carrying for a specified time currents under specified abnormal circuit conditions such as those of short-circuit

Note 1 to entry: A switch may be capable of making, but not breaking, short-circuit currents.

[SOURCE: IEC 60050-441:1984, 441-14-10]

3.2
disconnector
mechanical switching device which, in the open position, complies with the requirements specified for the isolating function

Note 1 to entry: A disconnector is capable of opening and closing a circuit when either a negligible current is broken or made, or when no significant change in the voltage across the terminals of each of the poles of the disconnector occurs. It is also capable of carrying currents under normal circuit conditions and carrying for a specified time currents under abnormal conditions such as those of short circuit.

[SOURCE: IEC 60050-441:1984, 441-14-05, modified — Reference has been made to the isolating function instead of the isolating distance.]

3.3
switch-disconnector
switch which, in the open position, satisfies the isolating requirements specified for a disconnector

[SOURCE: IEC 60050-441:1984, 441-14-12]

3.4
enclosed switch
switch with a dedicated enclosure, providing a specified degree of protection against certain external influences

4 Classification

Devices according to this standard are classified into two classes, class 0 and class 1. Class 0 is the minimum requirement level, as class 1 is this required by harsh and rough/heavy duty conditions, for example for chemical industries.

Both are specified in Table 1.

5 Characteristics

Clause 4 of IEC 60947-3:2008, Amendment 1:2012 applies.

6 Product information

6.1 Nature of information

Subclause 5.1 of IEC 60947-1:2007, Amendment 1:2010 applies with the following additional dashed item under list of "*Characteristics*":

– corresponding class of this standard.

6.2 Markings

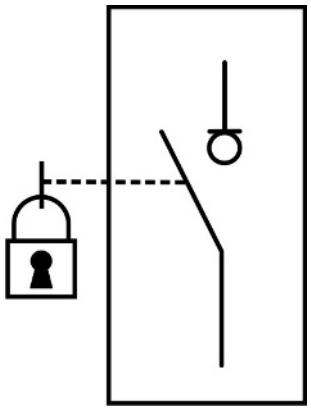
6.2.1 Front-marking

Each device shall be marked in a durable and legible manner with the following data.

The markings for a), b) and c) below shall be on the equipment itself or on a name-plate or name-plates attached to the device, and shall be located at a place such that they are legible from the front after mounting the equipment in accordance with the manufacturer's instructions.

a) Indication of the open and closed position. The open and closed position shall be respectively indicated by the graphical symbols ◯ (IEC 60417-5008 (2002-10)) and | (IEC 60417-5007 (2002-10)), see 7.1.6.1 of IEC 60947-1:2007.

b) Symbol for marking according to this standard, see Figure 1.



IEC 0547/14

Figure 1 – Symbol for marking according to this standard

c) A corrosion-resistant label or plate marked with the text "maintenance switch" or translated in national language. The label or plate shall be colored according to national practice.

The height of the text shall be at least 5 mm. The text "maintenance switch" shall be marked in a durable and legible manner and the color of the text shall be different from the color of the label or plate.

NOTE The translations of the terms "maintenance switch" on the label into different languages can be for example "interrupteur de maintenance", "Sicherheitschalter", or equivalent translations in other languages.

6.2.2 Additional marking

The following information shall be marked on the equipment, but does not need to be visible from the front when the device is mounted:

a) manufacturer's name or trade mark;

b) type designation or serial number;

c) rated operational current (or rated power) at the rated operational voltage;

d) value (or range) of the rated frequency;

e) number of this standard (IEC 62626-1) including class (see Clause 4), if the manufacturer claims compliance with this standard.

7 Normal service, mounting and transport conditions

Clause 6 of IEC 60947-3:2008 applies, as applicable.

8 Constructional and performance requirements

8.1 Constructional requirements

8.1.1 General

To fulfill the safety disconnection requirements, it is necessary to have both a switch for start and stop and a separate maintenance switch. A maintenance switch shall not be equipped with means for remote control or automatic switching.

Subclause 7.1 of IEC 60947-3:2008, Amendment 1:2012 applies, as applicable.

8.1.2 Locking

The locking means shall be designed in such a way that the device can be padlocked in OFF position. The requirements for padlocking and opening of the enclosure are given in Table 1.

8.1.3 Environmental influences

The corrosion resistance of the device shall be tested. Requirements for corrosion resistance are given in Table 1.

8.1.4 Mechanical strength

The mechanical strength of the device shall be tested. Requirements for mechanical strength are given in Table 1.

8.1.5 Degree of protection

The device shall have a minimum degree of protection according to Table 1.

8.1.6 Operation/actuation

Actuators mounted on removable covers or on panel or cabinet doors shall be so designed that, when the covers are replaced or the doors closed, the actuator will engage correctly with the associated mechanism.

8.2 Performance requirements

8.2.1 General

Subclause 7.2 of IEC 60947-3:2008, Amendment 1:2012 applies, as applicable.

8.2.2 Switching capacity

The device shall have a utilization category according to Table 1.

The device shall be designed for uninterrupted duty (see 4.3.4.2 of IEC 60947-1:2007).

9 Tests

9.1 General

Clause 8 of IEC 60947-3:2008, Amendment 1:2012 applies, as applicable.

9.2 Type tests

The type tests listed in Table 1 shall be carried out in addition to the tests according to IEC 60947-3:2008, Amendment 1:2012.

For each test a new sample may be used.

Table 1 – Requirements and tests for devices

Item	Requirements		Tests
	Class 0	Class 1	
Mechanical strength of the device [a]	IK06	IK09	IEC 62262:2002, 4.1, 4.2, 4.3 [b]
Degree of protection of the device	IP54	IP65	IEC 60947-1:2007, Annex C
Opening of the enclosure is possible only with tools	Yes	Yes	Visual inspection
Opening of the enclosure in OFF-position when padlocked	– [e]	No [f]	Visual inspection
Damp heat, salt mist and vibrations	Category A	Categories C and D	IEC 60947-1:2007, Annex Q [d]
Utilization category	AC-23B	AC-3	IEC 60947-3
Padlocking capability, minimum value	3 [c]	3	IEC 60947-1:2007, 7.1.7.3

[a] For this test the device is in OFF-position and locked with only one padlock.

[b] Device condition during and after the test:
- the device is in OFF-position and locked;
- closing of contacts is considered as a failure;
- padlocking capability shall remain;
- after the test the degree of protection shall not be less than IP54.

[c] Use of accessories is allowed to gain minimum value.

[d] For these special tests, Annex Q of IEC 60947-1:2007 applies with the following additions:
- Where Table Q.1 of IEC 60947-1:2007, Amendment 1:2010 calls for verification of operational capability, this shall be made by carrying out by 5 ON and OFF operations;
- The vibration tests shall be done on the devices with the contacts in the open and closed position. During the test unintended opening or closing of the contacts is not allowed. To check the contacts, tests may be done under any current / voltage value;
- For low temperature tests, devices shall not be energized during conditioning and testing, except for functional tests.

With the agreement of the manufacturer, the duration of the recovery periods may be reduced.

[e] No requirement specified.

[f] Device damaged after opening.

Bibliography

IEC 60204-1, *Safety of machinery – Electrical equipment of machines – Part 1: General requirements*

IEC 60364-5-51, *Electrical installations of buildings – Part 5-51: Selection and erection of electrical equipment – Common rules*

IEC 60529, *Degrees of protection provided by enclosures (IP code)*

IEC 60947-5-1, *Low-voltage switchgear and controlgear – Part 5-1: Control circuit devices and switching elements – Electromechanical control circuit devices*

ISO 13850, *Safety of machinery – Emergency stop – Principles for design*

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