SLOVENSKI STANDARD
SIST EN IEC 60947-3:2021/oprA1:2024

01-junij-2024

Nizkonapetostne stikalne in krmilne naprave - 3. del: Stikala, ločilniki, ločilna stikala in stikalni aparati z varovalkami - Dopolnilo A1

Amendment 1 - Low-voltage switchgear and controlgear - Part 3: Switches, disconnectors, switch-disconnectors and fuse-combination units

Niederspannungsschaltgeräte - Teil 3: Lastschalter, Trennschalter, Lasttrennschalter und Schalter-Sicherungs-Einheiten

Appareillage à basse tension - Partie 3: Interrupteurs, sectionneurs, interrupteurs-sectionneurs et combinés-fusibles

Ta slovenski standard je istoveten z: **EN IEC 60947-3:2021/prA1:2024**

ICS:

29.120.40	Stikala	Switches
29.130.20	Nizkonapetostne stikalne in krmilne naprave	Low voltage switchgear and controlgear

SIST EN IEC 60947-3:2021/oprA1:2024 **en**

121A/599/CDV

COMMITTEE DRAFT FOR VOTE (CDV)

PROJECT NUMBER: **IEC 60947-3/AMD1 ED4**	
DATE OF CIRCULATION: **2024-03-29**	CLOSING DATE FOR VOTING: **2024-06-21**
SUPERSEDES DOCUMENTS: **121A/563/CD, 121A/572A/CC**	

IEC SC 121A : LOW-VOLTAGE SWITCHGEAR AND CONTROLGEAR	
SECRETARIAT: France	SECRETARY: Mr Michaël LAHEURTE
OF INTEREST TO THE FOLLOWING COMMITTEES: TC 23,TC 82,SC 121B	PROPOSED HORIZONTAL STANDARD: ☐ Other TC/SCs are requested to indicate their interest, if any, in this CDV to the secretary.
FUNCTIONS CONCERNED: ☒ EMC ☐ ENVIRONMENT ☐ QUALITY ASSURANCE ☒ SAFETY	
☒ SUBMITTED FOR CENELEC PARALLEL VOTING	☐ NOT SUBMITTED FOR CENELEC PARALLEL VOTING
Attention IEC-CENELEC parallel voting The attention of IEC National Committees, members of CENELEC, is drawn to the fact that this Committee Draft for Vote (CDV) is submitted for parallel voting. The CENELEC members are invited to vote through the CENELEC online voting system.	

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Recipients of this document are invited to submit, with their comments, notification of any relevant "In Some Countries" clauses to be included should this proposal proceed. Recipients are reminded that the CDV stage is the final stage for submitting ISC clauses. (SEE AC/22/2007 OR NEW GUIDANCE DOC).

TITLE:

Amendment 1 - Low-voltage switchgear and controlgear - Part 3: Switches, disconnectors, switch-disconnectors and fuse-combination units

PROPOSED STABILITY DATE: 2028

NOTE FROM TC/SC OFFICERS:

SC121A Officers support circulation of CDV for project IEC 60947-3/AMD1 ED4.

Secretary Note: NC experts are kindly requested to refer their comments to line number.

INTERNATIONAL ELECTROTECHNICAL COMMISSION

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LOW-VOLTAGE SWITCHGEAR AND CONTROLGEAR –

PART 3: SWITCHES, DISCONNECTORS, SWITCH-DISCONNECTORS AND FUSE-COMBINATION UNITS

AMENDMENT 1

FOREWORD

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Amendment 1 to IEC 60947-3 ED4 has been prepared by subcommittee 121A: Low-voltage switchgear and controlgear, of IEC technical committee 121: Switchgear and controlgear and their assemblies for low voltage.

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

– Addition of remotely operated devices
– Addition of a new Annex G defining the requirements for Battery Power Switches (PBS) for use in battery storage systems,
– Addition of test requirements for short circuit making of single-phase operated switches and switch-disconnectors

– Switches for photovoltaic applications with utilisation categories DC-PV1 and DC-PV2 can, subject to marking, be suitable for current flow in one or both directions.

– More clarity on the measurement of power loss in devices.

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The text of this Amendment is based on the following documents:

Draft	Report on voting
XX/XX/XXXX	XX/XX/XXX

Full information on the voting for its approval can be found in the report on voting indicated in the above table.

The language used for the development of this Amendment is English.

This document was drafted in accordance with ISO/IEC Directives, Part 2, and developed in accordance with ISO/IEC Directives, Part 1 and ISO/IEC Directives, IEC Supplement, available at www.iec.ch/members_experts/refdocs. The main document types developed by IEC are described in greater detail at www.iec.ch/publications/.

The committee has decided that the contents of this document will remain unchanged until the stability date indicated on the IEC website under 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.

2 Normative references

Add the following normative reference:

IEC 60068-2-14:2009, *Environmental testing – Part 2-14: Tests – Test N: Change of temperature*

3.3 General terms

Add following terms:

3.3.11
Remotely operated equipment
switching equipment that is electrically operated from a point distant from the controlled switching device

Note 1 to entry: A remotely operated switch can have an additional feature for local and/or manual (non-electrical) operation.

Note 2 to entry: remote operation can be performed by an integral device or an auxiliary device associated with the switching device, for example, motor operator or coils.

3.3.12
operating time of a remotely operated equipment
time measured from the instant when the switching operation is initiated at the switching device to; (i) the closing of the main contacts *(see 3.7.44 of IEC 60947-1:2020)*; or (ii) the opening of the main contacts *(see 3.7.39 of IEC 60947-1:2020)*

Note 1 to entry: Operating times from closed to open (opening time) and from open to closed (closing time) can be different.

4.2 According to the method of operation

4.2.2 Remotely operated equipment

Delete 'under consideration' and add the following:

– remotely operated
  - self-powered remotely operated equipment
  - externally powered remotely operated equipment

Type of remote operation:
  - Opening and closing: both opening and close operation controllable from remote
  - Opening only: only opening operation controllable from remote.

5 Characteristics

5.2 Type of equipment

Add the following dash:

– control method of the device

5.5 Control circuits

Subclause 5.5 of IEC 60947-1:2020 applies.

Add the following subclause:

5.5.3 Remote operation

The manufacturer shall declare the following:

a) Minimum and maximum values of voltage operating limits for the control supply and, as applicable, corresponding frequency
b) the closing time, when applicable (3.7.44 of IEC 60947-1:2020)
c) the opening time (3.7.39 of IEC 60947-1:2020)
d) the type of operating signal
    i) permanent signal
    ii) single impulse
e) information on power consumption for remote operation
    i) nominal power consumption and duration.
    ii) inrush power consumption and duration, if applicable.
    iii) connection arrangement.

6 Product information

6.1 Nature of information

Modify the dash for 'rated impulse withstand voltage (see 5.3.1.3)' in 6.1 of IEC 60947-1:2020 as follows:

– rated impulse withstand voltage (see 5.3.1.3);
    a) main power circuit of the equipment;
    b) control circuits.

6.2 Marking

Replace Table 3 with the following;

Item	Information	Marking location
1.1	Indication of the open and close position. If symbols are used, the open position shall be indicated by graphical symbol IEC 60417-5008:2002-10 and the closed position by graphical symbol IEC 60417-5007:2002-10 (see 8.1.6.1 of IEC 60947-1:2020).	Visible
1.2	Suitability for isolation. The appropriate symbols of Table 1 shall be used.	Visible
1.3	Additional marking for disconnectors. Devices of utilization category AC-20A, AC-20B, DC-20A, DC-20B, DC-PV0 and DC-BPS0 shall be marked "Do not operate under load" adjacent to these categories, unless the device has interlocking means to prevent such an operation.	Visible
1.4	Additional marking for remotely operated equipment. When remote closing is provided this mode of operation shall be clearly indicated on the product if a locking means in the OFF position is not provided,	Visible
2.1	Manufacturer's name or trademark.	Marked
2.2	Type designation or catalogue reference.	Marked
2.3	Rated operational currents (or rated powers) with the corresponding rated operational voltage and utilization category, see Clause 5.3.2 and Clause 5 and/or D.5.4 and/or G.5.4).	Marked
2.4	Value (or range) of the rated frequency or the indication "DC" (or the symbol ⎓ IEC 60417-5031:2002-10).	Marked
2.5	For fuse-combination units, the fuse type characteristics and maximum rated current and the maximum power loss of the fuse-link.	Marked [a]
2.6	IEC 60947-3, if the manufacturer claims compliance with this document.	Marked
2.7	Degree of protection of enclosed equipment (see Annex C of IEC 60947-1:2020).	Marked
2.8	Terminals shall be identified "load" and "line", unless the connection is immaterial (see 9.3.4.4.1).	Marked
2.9	Neutral pole terminal, if applicable, shall be identified by the letter "N" (see 8.1.8.4 of IEC 60947-1:2020).	Marked
2.10	When a protective earth terminal is provided, it shall be identified by the symbol ⏚ IEC 60417-5019:2006-08 (see 8.1.10.3 of IEC 60947-1:2020).	Marked
2.11	"+" and "−" polarities, if applicable.	Marked
3.1	Classification of equipment if remotely controlled -remotely operated.	Literature
3.2	Rated insulation voltage.	Literature
3.3	Rated impulse withstand voltage: – Main power circuit of the equipment. – Control circuits.	Literature
3.4	Pollution degree, if different from 3.	Literature
3.5	Rated duty (see 5.3.5 and Clause A.2).	Literature
3.6	Rated short-time withstand current and duration, where applicable.	Literature
3.7	Rated short-circuit making capacity, where applicable.	Literature
3.8	Rated conditional short-circuit current, where applicable.	Literature
3.9	Diagram and method of series connecting poles of mechanical switching devices for each operational rating, if applicable.	Literature
3.10	For switches in accordance with Annex D and G – appropriate connections to the PV generator or supply and load, if applicable.	Literature
3.11	For devices in accordance with Annex D and G – suitable for indoor or outdoor use.	Literature
3.12	Closing time for equipment that can be closed remotely	Literature

3.13	Opening time of a remotely operated equipment	Literature
3.14	Connection arrangement for remote operation	Literature
3.15	Type of operating signal if remotely operated: – Permanent signal. – Single impulse.	Literature
3.16	Details of power consumption for remote operation – Nominal power consumption and duration – Inrush power consumption and maximum duration, if applicable.	Literature
3.17	Minimum and maximum values of voltage operating limits for the control supply and, as applicable, corresponding frequency	Literature

Key

Visible: visible from the front when the device is installed as in service in accordance with the manufacturer's instructions and the actuator is accessible and operable;

Marked: marked on the product;

Literature: in the manufacturer's literature. (A visible digital link, for example a QR-code, may be added on the product to guide user to literature in electronic/digital format).

Information relating to auxiliaries shall be marked on the auxiliary or the product. If space is insufficient the data shall be given in the manufacturer's literature.

[a] Shall be visible after the product is installed in accordance with the manufacturer's instructions but need not necessarily be visible from the front.

Add new subclause

8.1.10 Additional requirements for remotely operated equipment

All remotely operated equipment with an isolation function shall have a manual means of opening when operating power is not available.

8.2 Performance requirements

8.2.1.1 General

Add following paragraph at the end of the subclause:

In the case of a remotely operated equipment unexpected simultaneously remote and manual operation shall be prevented, unless alternative precautions are used, for example;

i. it shall be possible to disable the remote operation mode when the operator is local to the device.

ii. the device operation is triggered at the device only by an electric signal (e.g. via a pushbutton).

iii. the device is arranged for remote and manual opening only and it has a trip free mechanism.

In the case of equipment that can be closed remotely, it shall be possible to prevent the remote closing operation.

Add new subclause:

8.2.1.5 Power operated equipment

Subclause 9.3.3.2.1 of IEC 60947-1:2020, power operated equipment, applies.

Add the following:

All remotely operated devices, excluding AC20 and DC 20 devices, shall have an operating mechanism with the same characteristics as independent manual operation.

9 Tests

9.3.4.1 General

9.3.4.1 General test conditions

Add the following paragraph at the end of the subclause.

When a device is suitable for dependent or semi-independent manual operation and remote operation the making and breaking capacities shall be verified by conducting the full test sequence both manually and remotely. Two samples may be used. When a device is suitable for independent manual operation and uses the same operating mechanism for remote operation it shall be verified using the manually independent or remote mode of operation.

9.3.4.3.1 General

Subclause 9.3.3.4.1 of IEC 60947-1:2020 applies.

9.3.5.1 General

Add the following paragraph at the end of the subclause

If the equipment to be tested includes current transformers with external connection, the core of the current transformer, if intended to be earthed, and all terminals of secondary windings for external connection shall be connected to earth.

When a device is suitable for dependent or semi-independent manual operation and remote operation the ability to make, break currents shall be verified by conducting the full test sequence both manually and remotely. Two samples may be used.

9.3.5.2.1 Test values and conditions

Add new paragraphs at the beginning of the clause:

Devices suitable for manual or remote operation shall have their operations carried out using manual or remote means as applicable.

When a device is suitable for remote and independent manual operation 80% of the total operations shall be carried out remotely and 20% manually, with the number of operations rounded to the nearest whole number. 80% of the specified operations with current shall be carried out with the remote means and 20% in the manual mode.

When manual operation involves the use of external power (i.e., stored energy charging motor), the 20% of manual operations specified above can be carried out using external power, except for 10 operating cycles that shall be carried out using manual (hand, no electrical power) operating means.

9.3.5.2.6 Condition of the equipment after the operational performance test

Reword 2nd and 3rd paragraph as follows;

For manual operation, the manual force required for any opening action shall not be greater than the test force of 9.2.6.2 of IEC 60947-1:2020 and Table 17 of IEC 60947-1:2020.

A closing operation is considered satisfactory when normal operation will close the contacts sufficiently for the equipment to be able to carry its rated operational current.

9.3.6.1 General

Add the following paragraph at the end of the subclause

When a device is suitable for dependent or semi-independent manual operation and remote operation, the ability to make, break or withstand short-circuit currents shall be verified by conducting the full test sequence both manually and remotely. When a device is suitable for independent manual operation and remote operation it shall be verified using the manually independent or remote mode of operation.

9.3.6.2.4 Test procedure

Replace 9.3.6.2.4 with the following:

The temporary connections B are replaced by the equipment under test, with test cables if applicable, (see 9.3.3.1) and the test current is applied for the specified time with the equipment in the closed position.