
Generatorji impulzov za električne ograje - Varnostne zahteve za baterijsko napajane generatorje impulzov za električne ograje, ki se jih da priključiti na omrežno napajanje (IEC 61011-1:1989; spremenjen)

Electric fence energizers – Safety requirements for battery – operated electric fence energizers suitable for connection to the supply mains (IEC 61011-1:1989, modified)

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Descriptors: Electrical installation, electric fence, supply mains, battery, accumulator, safety requirement

English version

Electric fence energizers
Safety requirements for battery-operated electric fence energizers suitable for connection to the supply mains

(IEC 1011-1:1989, modified)

Electrificateurs de clôtures
Règles de sécurité pour électrificateurs de clôtures fonctionnant sur piles ou accumulateurs et destinés à être raccordés au réseau de distribution d'énergie
(CEI 1011-1:1989, modifiée)

Elektrozaungeräte
Sicherheitsbestimmungen für Elektrozaungeräte für Netzanschluß und Batteriebetrieb
(IEC 1011-1:1989, modifiziert)

This European Standard was approved by CENELEC on 10 December 1991. 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 Central Secretariat or to any CENELEC member.

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 Central Secretariat has the same status as the official versions.

CENELEC members are the national electrotechnical committees of Austria, Belgium, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

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CENELEC

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

Central Secretariat: rue de Stassart 35, B-1050 Brussels

Foreword

The CENELEC questionnaire procedure, performed for finding out whether or not the International Standard IEC 1011-1 : 1989 could be accepted without textual changes, has shown that some common modifications were necessary for the acceptance as European Standard. The reference document, together with the common modifications prepared by the CENELEC Reporting Secretariat SR 61H, was submitted to the CENELEC members for formal vote.

The text of the draft was approved by CENELEC as EN 61011-1 on 10 December 1991.

The following dates were fixed:

- latest date of publication (dop) 1993-01-01 of an identical national standard
- latest date of withdrawal (dow) 1993-07-01 of conflicting national standards

For products which have complied with the relevant national standard before 1993-07-01, as shown by the manufacturer or by a certification body, this previous standard may continue to apply for production until 1998-07-01.

This standard is intended to be used in conjunction with EN 61011 - Electric fence energizers - Safety requirements for mains-operated electric fence energizers.

The clauses of this standard supplement or modify the corresponding clauses of EN 61011. Where a particular subclause of EN 61011 is not mentioned in this standard, that subclause applies as far as is reasonable. Where this standard states 'addition', 'modification' or 'replacement', the relevant text of EN 61011 is to be adapted accordingly.

Subclauses, figures or tables which are in addition to those in EN 61011 are numbered starting from 101.

Annexes which are in addition to those in IEC 1011-1 are numbered ZA, ZB etc. Annexes designated 'normative' are part of the body of the standard. Annexes designated 'informative' are given only for information. In this standard, annexes ZA (special national conditions) and ZC (cross references) are normative, annex ZB (A-deviations) is informative.

NOTE. In this document, the following print types are used

- requirements proper: in roman type;
- *test specifications: in italic type;*
- explanatory matter: in smaller roman type.

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CONTENTS

Clause	Page
1. Scope	4
2. Definitions	4
3. General requirement	6
4. General notes on tests	6
5. Rating	8
6. Classification	8
7. Marking	9
8. Protection against electric shock	9
9. Void	10
10. Output characteristics	10
11. Heating	10
12. Void	11
13. Electrical insulation and leakage current at operating temperature	11
14. Radio and television interference suppression	11
15. Moisture resistance	11
16. Insulation resistance and electric strength	11
17. Resistance to atmospheric surges	11
18. Endurance	11
19. Abnormal operation	12
20. Void	12
21. Mechanical strength	12
22. Construction	12
23. Internal wiring	13
24. Components	13
25. Supply connection and external flexible cables and cords	13
26. Terminals for external conductors	13
27. Void	13
28. Screws and connections	13
29. Creepage distances, clearances and distances through insulation	13
30. Resistance to heat, fire and tracking	14
31. Resistance to rusting	14
32. Void	14
<p>ITeH STANDARD PREVIEW (standards.iteh.ai)</p>	
FIGURE	15
<p>SIST EN 61011-1:1999 https://standards.iteh.ai/catalog/standards/sist/6cbec953-2ee1-4364-9a09-90b27ecd0e5a/sist-en-61011-1-1999</p>	
APPENDICES	16
ANNEX ZA (normative) Special national conditions	16
ANNEX ZB (informative) A-Deviations	17
ANNEX ZC (normative) Publication references	18

ELECTRIC FENCE ENERGIZERS

Safety requirements for battery-operated electric fence energizers suitable for connection to the supply mains

1. Scope

This clause of EN 61011 is applicable except as follows:

1.1 *Replacement:*

This standard applies to battery-operated electric fence energizers suitable for connection to the supply mains.

Mains-operated electric fence energizers incorporating batteries to supply the energizer if the mains supply is interrupted and electric fence energizers designed for connection to a separate battery charger, are within the scope of this standard.

The types of electric fence energizers covered by this standard are indicated in Figure 101.

Separate battery chargers are covered by EN 60335-2-29.

Requirements for battery-operated electric fence energizers not designed for connection to the supply mains are given in EN 61011-2.

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2. Definitions

This clause of EN 61011 is applicable except as follows:

SIST EN 61011-1:1999
<https://standards.iteh.ai/catalog/standards/sist-en-61011-1-1999>
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2.2.1 *Addition:*

For energizers incorporating a battery charger, the rated supply voltage of the energizer is the rated output voltage of the battery charger.

For energizers designed for connection to a separate battery charger, the rated supply voltage of the energizer is the nominal voltage of the battery.

2.2.2 Addition:

For energizers incorporating a battery charger, the rated supply voltage range of the energizer is the rated output voltage range of the battery charger.

2.2.21 Replacement:

Battery-operated electric fence energizer suitable for connection to the supply mains denotes an electric fence energizer:

- a) operated by batteries and having, or being designed for connection to, facilities for charging these batteries from the supply mains, or
- b) designed for operation either from the supply mains or from batteries.

Battery-operated electric fence energizers suitable for connection to the supply mains are hereinafter referred to as energizers.

2.2.38 Addition:

The term "Body" also includes terminals or terminations for the connection of the battery and other metal parts in a battery compartment, which become accessible when replacing batteries even with the aid of a tool.

Additional sub-clauses:

2.2.101 *Battery charger* denotes a device to be connected to the supply mains and intended for charging one or more batteries.

2.2.102 *Rated voltage for battery supply* denotes the voltage for battery supply assigned to the energizer by the maker.

2.2.103 *Rated voltage range for battery supply* denotes the voltage range for battery supply assigned to the energizer by the maker, expressed by its lower and upper limits.

2.2.104 *Rated input current for battery supply* denotes the input current for battery assigned to the energizer by the maker.

2.2.105 *Type A energizer* denotes a combination consisting of an impulse-generating circuit, a battery charging circuit and a battery, the impulse-generating circuit being connected to the supply mains or the battery when the energizer is in operation.

Type A energizers are shown schematically in Figure 101.

2.2.106 *Type B energizer* denotes a combination consisting of an impulse-generating circuit, a battery charging circuit and a battery, the impulse-generating circuit being connected to the battery and disconnected from the battery charging circuit and the supply mains when the energizer is in operation. For recharging the battery the impulse-generating circuit is disconnected and inoperable.

Type B energizers are shown schematically in Figure 101.

2.2.107 *Type C energizer* denotes a combination consisting of an impulse-generating circuit and a battery, the impulse-generating circuit being connected to the supply mains or the battery when the energizer is in operation. It is necessary to remove the battery for recharging from a separate battery charger or, in the case of dry batteries, for replacement with new batteries.

Type C energizers are shown schematically in Figure 101.

2.2.108 *Type D energizer* denotes a combination consisting of an impulse-generating circuit and a battery, the impulse-generating circuit being connected to the battery when the energizer is in operation and the energizer and/or the battery being connected to a separate battery charger for recharging the battery.

Type D energizers are shown schematically in Figure 101.

3. General requirement

This clause of EN 61011 is applicable.

4. General notes on tests

This clause of EN 61011 is applicable except as follows:

4.2 Addition:

For Types A, B and C energizers an additional sample is required for the test of Clause 18.

4.4.1 Addition to Item 4:

Unless otherwise specified, application, to the terminals or terminations for the connection of the battery, of the most unfavourable voltage between:

- 0.55 and 1.1 times the rated voltage for battery supply, or 0.55 times the lower limit and 1.1 times the upper limit of the rated voltage range for battery supply, if the energizer can be used with dry batteries;

- 0.75 and 1.1 times the rated voltage for battery supply, or 0.75 times the lower limit and 1.1 times the upper limit of the rated voltage range for battery supply, if the energizer is designed for use with accumulators only.

For energizers with more than one rated voltage for battery supply, the most unfavourable rated voltage for battery supply is chosen.

The values specified in the following table for the internal resistance per cell of the battery shall be taken into account.

Supply voltage to the terminals or terminations for the connection of the battery	Internal resistance per cell Ω	
	Dry batteries	Accumulators
1.1 times rated voltage for battery supply	0.08	0.0012
1.0 times rated voltage for battery supply	0.10	0.0015
0.75 times rated voltage for battery supply	0.75	0.0060
0.55 times rated voltage for battery supply	2.00	-

For determining the internal resistance of a battery, two or more cells connected in parallel are considered to be one cell.

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For Type D energizers, application to the terminals or terminations for the connection of the battery charger, of the following:

- a source having the form of a half-wave rectified sinewave with an r.m.s. value equal to the rated voltage for battery supply;
- a source having the form of a full-wave rectified sinewave with an r.m.s. value equal to the rated voltage for battery supply.

In each case a series resistance of value 1 Ω shall be provided to represent the impedance of the source.

Additional item:

- 101) For energizers where the terminals or terminations for the connection of the battery have no indication for polarity, the application of the most unfavourable polarity of the voltage source replacing the battery.

4.4.2 Additional items:

- 101) *The most unfavourable voltage between 0 and 1.1 times the rated voltage for battery supply or 1.1 times the upper limit of the rated voltage range for battery supply, is applied to the terminals or terminations for the connection of the battery.*
- 102) *Terminals or terminations for the connection of the battery having an indication for polarity are connected to the opposite polarity, unless such a connection is unlikely to occur in normal use.*
- 103) *Terminals or terminations for the connection of the battery supply are connected to the most unfavourable load, including a short circuit.*

Additional sub-clauses:

4.4.101 *For Types A, B and C energizers the tests of Clauses 10, 11, 14, 18 and 19 are made twice as follows:*

- *while the energizer is supplied from a source delivering a voltage as specified for mains-operated energizers in Item 4 of Sub-clause 4.4.1;*
- *while the energizer is supplied from a source delivering a voltage as specified for battery-operated energizers in Item 4 of Sub-clause 4.4.1, or in Item 101) of Sub-clause 4.4.2;*

The same conditions apply when establishing whether a part is a live part.

4.4.102 *For Type D energizers the tests of Clauses 10, 11, 14, 18 and 19 are made while the energizer is supplied from a source delivering a voltage as specified for battery-operated energizers in Item 4 of Sub-clause 4.4.1 and in Item 101) of Sub-clause 4.4.2.*

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5. Rating

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This clause of EN 61011 is applicable except as follows:

5.1 Addition:

The maximum rated supply voltage for battery operation is 36 V d.c.

6. Classification

This clause of EN 61011 is applicable.

7. Marking

This clause of EN 61011 is applicable except as follows:

7.1 Addition:

- rated voltage(s) for battery supply or rated voltage range(s) for battery supply in volts;
- rated input current for battery supply in amperes;
- type of battery, unless the type is irrelevant for the operation of the energizer, distinguishing between dry batteries and accumulators if necessary;
- maker's model or type reference of the appropriate battery charger, for Type D energizers.

Energizers incorporating a fuse shall be marked with the rated current of the appropriate fuse-link, in amperes. If the fuse-link is a time-lag fuse-link this information shall be included in the relevant marking.

Additional sub-clause:

- 7.101 Terminals or terminations for the connection of the battery shall be clearly indicated by the symbol "+" or the colour red if of positive polarity, and by the symbol "-" or the colour black if of negative polarity, unless the polarity is irrelevant.

Compliance is checked by inspection.

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8. Protection against electric shock

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This clause of EN 61011 is applicable except as follows:

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Additional sub-clause: [015e-d0e5a/sist-en-61011-1-1999](https://standards.iteh.ai/catalog/standards/sist/6cbec953-2ee1-4364-9a09-015e-d0e5a/sist-en-61011-1-1999)

- 8.101 Terminals or terminations for the connection of the battery other than for Type D energizers, and other metal parts in a battery compartment which become accessible when replacing batteries, even with the aid of a tool, shall be insulated from live parts by double insulation or reinforced insulation.

Compliance is checked by inspection and by the tests specified for double insulation or reinforced insulation.