



SLOVENSKI STANDARD
SIST EN IEC 60335-2-76:2022/A11:2022

01-februar-2022

Gospodinjski in podobni električni aparati - Varnost - 2-76. del: Posebne zahteve za generatorje impulzov za električne ograje - Dopolnilo A11

Household and similar electrical appliances - Safety - Part 2-76: Particular requirements for electric fence energizers

Sicherheit elektrischer Geräte für den Hausgebrauch und ähnliche Zwecke - Teil 2-76: Besondere Anforderungen für Elektrozaungeräte

Appareils électrodomestiques et analogues - Sécurité - Partie 2-76: Règles particulières pour les électrificateurs de clôtures

Ta slovenski standard je istoveten z: EN IEC 60335-2-76:2021/A11:2021

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ICS:

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| 65.040.10 | Poslopja, naprave in oprema za živino | Livestock buildings, installations and equipment |
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EUROPEAN STANDARD
NORME EUROPÉENNE
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**EN IEC 60335-2-
76:2021/A11**

October 2021

ICS 65.040.99

English Version

Household and similar electrical appliances - Safety - Part 2-76: Particular requirements for electric fence energizers

Appareils électrodomestiques et analogues - Sécurité -
Partie 2-76: Règles particulières pour les électrificateurs de
clôtures

Sicherheit elektrischer Geräte für den Hausgebrauch und
ähnliche Zwecke - Teil 2-76: Besondere Anforderungen für
Elektrozaungeräte

This amendment A11 modifies the European Standard EN IEC 60335-2-76:2021; it was approved by CENELEC on 2021-09-20. CENELEC members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this amendment 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.

This amendment 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.

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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

EN IEC 60335-2-76:2021/A11:2021 (E)**European foreword**

This document (EN IEC 60335-2-76:2021/A11:2021) has been prepared by CLC/TC 61 “Safety of household and similar electrical appliances”.

The following dates are fixed:

- latest date by which this document has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 2022-09-20
- latest date by which the national standards conflicting with this document have to be withdrawn (dow) 2024-09-20

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.

The numbering system for European clauses, subclauses, notes, tables, figures and annexes that are additional to those in the IEC standard are prefixed with the letter “Z”.

This document is read in conjunction with EN IEC 60335 2 76:2021.

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.

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TEXT of A11 of EN IEC 60335-2-76

1 Modification to the Introduction

Add:

With this European amendment A11 the standard EN 60335-2-76:2005+A1:2006+A2:2015+A11:2008+A12:2010 is superseded.

This standard is not linked to any European legislation.

This European amendment A11 supplements or modifies the corresponding clauses of the standards below:

- EN 60335-1:2012+A11:2014+ A13:2017+A1:2019+A14:2019+A2:2019 (Part 1)
- EN IEC 60335-2-76:2021 (Part 2)

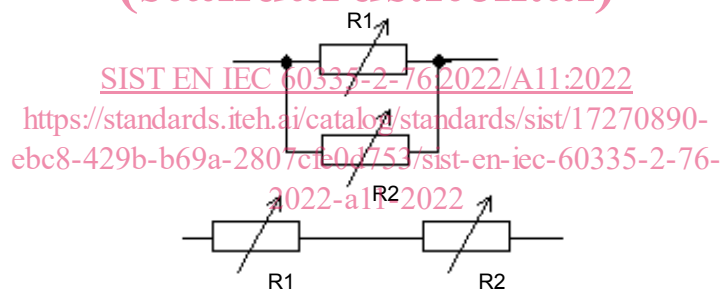
2 Modification to Clause 3 “Term and definitions”

3.8.101

standard load

Replace the definition as following:

load consisting of the non-inductive resistor R1 between 50 Ω and 500 Ω giving the most severe condition and a non-inductive variable resistor R2 that is adjusted so as to maximize the energy per impulse or, when applicable, the cumulated duration of peak current exceeding 20 A in the non-inductive resistor R1, whichever gives the more unfavourable result. The non-inductive variable resistor R2 is connected in series or parallel with the non-inductive resistor R1, whichever gives the more unfavourable result



Key

R1 non inductive resistor between 50 Ω and 500 Ω

R2 non inductive variable resistor

3 Modification to Clause 6 “Classification”

6.101 *Delete the clause*

4 Modification to Clause 7 “Marking and instructions”

7.1 *Replacement:*

In the second paragraph, replace “Energy limited energizers” by “Energizers”.

7.12.1 *Addition:*

The installation instructions for energizers fitted with polyvinyl chloride sheathed cords shall state that the energizer has to be located in a shelter and must not be handled when the ambient temperature is below +5 °C.

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5 Modification to Clause 10 “Power input and current”

10.101 *Replace “energy limited energizers” by “energizers”.*

6 Modification to Clause 22 “Construction”

22.108 *Replace third dashed item with:*

- the energy/impulse in the non-inductive resistor R1 of the **standard load** shall not exceed 5 J and the peak current in the non-inductive resistor R1 of the **standard load** shall not exceed 20 A for more than 200 μ s cumulated per impulse;

Delete the fourth dashed item.

22.115 *Replace the first paragraph with following:*

Type S security energizer group output characteristics measured in the 500 Ω resistor R_T shall be such that

- the impulse repetition rate shall not exceed 1 Hz;
- the **impulse duration** of the impulse shall not exceed 10 ms;
- the energy/impulse shall not exceed 5 J;

NOTE The energy/impulse is the energy measured in the impulse over the **impulse duration**

7 Modification to “Figures”

Delete Figure 103

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8 Modification to “Annexes”

The annexes of part 1 are applicable except at follows:

Annex A (informative)

Routine tests

A.3 Functional test

Replace the addition with following:

The **energizer** output characteristic shall be checked by operating the **energizer** at **rated voltage** with a 500 Ω load connected across the output terminals.

The **energizer** output characteristic shall be such that

- the impulse repetition rate shall not exceed 1 Hz;
- the **impulse duration** of the impulse shall not exceed 10 ms;
- the energy/impulse shall not exceed 5 J;

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Add the Annex ZAA:

Annex ZAA (normative)

Time delayed electric fence energizers

The following modifications to this standard are applicable for **time delayed electric fence energizers**.

3 Definitions

3.ZAA.1

time delayed electric fence energizer

electric fence energizer that when a very low load impedance is detected at the output terminals, has its maximum output impulses limited for the duration of the **delay time**, but permits the output impulses to rise even above the normal maximum allowed value of 5 J after the **delay time**

3.ZAA.2

delay time

time the **energizer** waits before its maximum output energy is allowed to increase in response to a changed load

3.ZAA.3

adaptation time

time by which an **energizer** output has reached steady-state in response to a changed load after the **delay time** has elapsed

7 Marking and instructions

7.1 Addition:

The **energizer** shall be marked with the substance of the words "**time delayed electric fence energizer**" or with the symbol (see 7.6) and shall not be marked as being suitable for use in a **security energizer group**.

Compliance is checked by inspection.

7.6 Addition:



Time delayed electric fence energizer

7.12 Addition:

If the "**time delayed electric fence energizer**" symbol or the substance of the words "**time delayed electric fence energizer**" is marked on the appliance, its meaning shall be explained.

The instructions for **energizers** marked "**time delayed electric fence energizer**" or with the symbol (see 7.6) shall clearly state that it is not suitable for use in a **security energizer group**.

The instructions for **energizers** marked "**time delayed electric fence energizer**" or with the symbol shall state the **delay time** of the **energizer** using the substance of the following:

This time delayed electric fence energizer has a delay time of x seconds.

Compliance is checked by inspection.

7.14 Addition:

The diameter of the circle in the symbol for **time delayed electric fence energizer** shall be at least 15 mm.

Compliance is checked by measurement.

22 Construction

22.108 Replacement:

22.108 The output characteristics of **time delayed electric fence energizers** shall be such that

- the **delay time** shall be between 15 s and 60 s,
- the **adaption time** shall be less than 1 min,
- the impulse repetition rate shall not exceed 1 Hz,
- the **impulse duration** of the impulse in the non-inductive resistor R1 of the **standard load** shall not exceed 10 ms,
- when the load at the output terminals exceeds 500 Ω , or was less than 500 Ω and then exceeds 500 Ω at least once within the **delay time**, the energy/impulse in the non-inductive resistor R1 of the **standard load** shall not exceed 5 J and the peak current in the non-inductive resistor R1 of the **standard load** shall not exceed 20 A for more than 200 μ s cumulated per impulse.
- when the impedance of a load X at the output terminals has stayed below 500 Ω for more than the **delay time**, the output impulse energy into X shall not exceed the steady-state limits given in Table ZAA.1,

Table ZAA.1 – Maximum total steady-state output impulse energy

| Impedance of load X Ω | Maximum total steady-state output impulse energy J |
|---------------------------------|--|
| ≤ 100 | 15 |
| 200 | 12,5 |
| 300 | 8,3 |
| 400 | 6,3 |
| 500 | 5 |

The output from the **energizer** shall not exceed the curve created by linearly joining the above points.

- when a load H with an impedance variable from 175 Ω to 1500 Ω is placed in parallel with a load X, having an impedance below 500 Ω , after X has stayed at the output terminals for more than the **delay time**, the energy/impulse into H shall not exceed 5 J and the peak current into H shall not exceed 20 A for more than 200 μ s cumulated per impulse, for the entire **delay time** after load H was applied.

Compliance is checked by measurement and by the following test, the **energizer** being operated under **normal operation** and supplied in accordance with 11.5:

- the **standard load**, limited to the possible range of values above 500 Ω , is connected to the output terminals and the energy/impulse measured in the non inductive resistor R1 of the **standard load** shall not exceed 5 J; and the peak current in the non-inductive resistor R1 of the **standard load** shall not exceed 20 A for more than 200 μ s cumulated per impulse.
- the **standard load** is then disconnected and successive loads X of 50 Ω , 100 Ω , 200 Ω , 300 Ω and 400 Ω and one randomly selected value between 50 Ω and 500 Ω representing a fence are connected between the output terminals and maintained until the sum of the **delay time** and **adaptation time** have elapsed. Then the load X is replaced between two consecutive impulses by a 500 $\Omega \pm 1 \Omega$ load for at least one impulse, and then replaced again between two consecutive impulses by the load X. During the full period starting with the first impulse in the 500 $\Omega \pm 1 \Omega$ load and finishing after the **delay time** following the return of the load X, the energy/impulse measured into the 500 Ω load and subsequently the load X, shall not exceed 5 J; and

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the peak current into the 500 Ω and subsequently the load X shall not exceed 20 A for more than 200 μ s cumulated per impulse.

- the loads X are again successively connected between the output terminals for a time exceeding the sum of **delay time** and **adaptation time**. The energy/impulse is continuously monitored and shall not exceed the values listed in Table ZAA.1. Then successive values of load H of 175 Ω , 300 Ω , 400 Ω , 500 Ω and 1 000 Ω , representing a body, are connected between two consecutive impulses in parallel to the load X for one additional **delay time**. Until the end of each additional **delay time**, the energy/impulse into H shall not exceed 5 J and the peak current into H shall not exceed 20 A for more than 200 μ s cumulated per impulse.

22.ZAA.1 Time delayed electric fence energizers with a maximum output energy exceeding 5 J under test conditions according to Subclause 22.108 shall incorporate the following alarm and output control function:

- If the alarm is enabled and if the impedance of the load at the output terminals of the **energizer** drops from above 1 000 Ω to below 400 Ω from one impulse to the next one and then remains below 400 Ω for more than six consecutive impulses, the alarm shall trigger and the impulse repetition rate shall decrease to less than 0,34 Hz. The alarm may stop and the normal impulse repetition rate shall recover as soon as the impedance connected to the output terminals increases above 600 Ω or when it has given alarm for at least 10 min and no more than 60 min.
- If the alarm has provision for the user to disable it and if the alarm is disabled, the **energizer** maximum energy/impulse shall not exceed 5 J and the peak current shall not exceed 20 A for more than 200 μ s cumulated per impulse and this shall be indicated by a visible means.
- If the **energizer** has an external visual or audible alarm and no internal alarm indication and if the external alarm is disconnected, the **energizer** maximum energy/impulse shall not exceed 5 J and the peak current shall not exceed 20 A for more than 200 μ s cumulated per impulse and this shall be indicated by a visible means.

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The alarm shall comprise both a visual and an audible indication when activated. The visual indicator shall be easily observed at a distance of 10 m from the device when placed in a typical internal laboratory setting, facing towards the observer. The audible indicator shall be tested with a measuring device having A-weighted sound pressure level (see EN 61672 series) at a distance of 1 m from the **energizer** and shall have a sound output of at least 55 dB. During these tests the **energizer** shall be in its working position complete with any outer case/cover.

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Compliance is checked by connecting a 1 000 $\Omega \pm 2,5 \Omega$ resistor to the output terminals of the **energizer** for at least 1 min, and then substituting it between two consecutive impulses by a 400 $\Omega \pm 2,5 \Omega$ resistor.