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JA DETONEERNÖÖRIDE RELEED. OSA 27:
ELEKTROONILISE INITSEERIMISSÜSTEEMI
KATSEMEETODID

Explosives for civil uses - Detonators and detonating
cord relays - Part 27: Test methods for electronic
initiation systems

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

<p>See Eesti standard EVS-EN 13763-27:2025 sisaldab Euroopa standardi EN 13763-27:2025 ingliskeelset teksti.</p> <p>Standard on jõustunud sellekohase teate avaldamisega EVS Teatajas.</p> <p>Euroopa standardimisorganisatsioonid on teinud Euroopa standardi rahvuslikele liikmetele kättesaadavaks 01.10.2025.</p> <p>Standard on kättesaadav Eesti Standardimis- ja Akrediteerimiskeskusest.</p>	<p>This Estonian standard EVS-EN 13763-27:2025 consists of the English text of the European standard EN 13763-27:2025.</p> <p>This standard has been endorsed with a notification published in the official bulletin of the Estonian Centre for Standardisation and Accreditation.</p> <p>Date of Availability of the European standard is 01.10.2025.</p> <p>The standard is available from the Estonian Centre for Standardisation and Accreditation.</p>
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Explosives for civil uses - Detonators and detonating cord relays - Part 27: Test methods for electronic initiation systems

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European foreword

This document (EN 13763-27:2025) has been prepared by Technical Committee CEN/TC 321 “Explosives for civil uses”, the secretariat of which is held by UNE.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by April 2026, and conflicting national standards shall be withdrawn at the latest by April 2026.

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

This document supersedes CEN/TS 13763-27:2003.

EN 13763-27:2025 includes the following significant technical changes with respect to CEN/TS 13763-27:2003:

- a) the document title has been changed from “Detonators and relays — Part 27: Definitions, methods and requirements for electronic initiation systems” to “Detonators and detonating cord relays — Part 27: Test methods for electronic initiation systems”;
- b) the document has been comprehensively revised to make the former technical specification fit the requirements of a European standard;
- c) the Introduction has been removed;
- d) the Scope has been entirely revised to clarify the content of the document as well as the covered and not covered explosives;
- e) the normative references have been updated;
- f) the former terminology entries 3.1 to 3.17 have been removed;
- g) the former Clauses 4 “Procedure”, 5 “Test report” and 6 “Requirements” have been removed;
- h) the new Clauses 4 “Test methods for electronic initiation systems”, 5 “Test methods for electronic detonators” and 6 “Test methods for units of electronic initiation systems” have been added;
- i) the new Clause 4 contains the revised specifications of the former Subclauses 4.5.1 “Evaluation of functionality”, 4.5.2 “Evaluation of fault tolerance”, 4.5.3 “Evaluation of design”, 4.5.6.3 “Test method for the determination of delay accuracy of electronic detonators” and 4.5.6.4 “Test method for the determination of electromagnetic compatibility of electronic detonators”;
- j) the new Clause 5 contains new test methods on the verification of the resistance to overvoltage and the verification of the resistance to dynamic pressure of electronic detonators as well as the revised specifications of the former Subclauses 4.5.6.1 “Slow temperature change test” and 4.5.6.2 “Rapid temperature change test”;
- k) the new Clause 6 contains new test methods on the verification of the maximum output current and the maximum transient output energy pulse, the verification of the insulation resistance and the verification of the resistance against climatic and mechanical stress;
- l) the former Annex C “Proposals for the detonator fuse head replaced (dummy detonators)” has been removed;

- m) the former Annex D “Determination of resistance to dynamic pressure” has been removed;
- n) the Annex ZA has been added;
- o) the Bibliography has been updated and now also lists EN ISO/IEC 17025:2017.

This document has been prepared under a standardization request addressed to CEN by the European Commission. The Standing Committee of the EFTA States subsequently approves these requests for its Member States.

For the relationship with EU Legislation, see informative Annex ZA, which is an integral part of this document.

A list of all parts in the EN 13763 series, published under the general title *Explosives for civil uses — Detonators and detonating cord relays*, can be found on the CEN website.

Any feedback and questions on this document should be directed to the users’ national standards body. A complete listing of these bodies can be found on the CEN website.

According to the CEN-CENELEC Internal Regulations, the national standards organisations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Türkiye and the United Kingdom.

1 Scope

This document specifies test methods for electronic initiation systems.

The test methods for electronic initiation systems refer to complete electronic initiation systems but also to electronic detonators, wireless electronic detonators and to firing units, programming units, testing units and control units that are part of an electronic initiation system.

Other parts of the EN 13763 series contain test methods applicable to electronic detonators, too.

This document does not apply to electric, non-electric, plain and semi-finished detonators, surface connectors, detonating cord relays, coupling accessories, leading wires and shock tubes.

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.

EN 13857-1:2025, *Explosives for civil uses — Part 1: Vocabulary*

EN 13763-1:2025, *Explosives for civil uses — Detonators and detonating cord relays — Part 1: Requirements*

EN 55011:2016,¹⁾ *Industrial, scientific and medical equipment — Radio-frequency disturbance characteristics — Limits and methods of measurement*

EN 60068-2-14:2009, *Environmental testing — Part 2-14: Tests — Test N: Change of temperature (IEC 60068-2-14:2009)*

EN 60068-2-27:2009, *Environmental testing — Part 2-27: Tests — Test Ea and guidance: Shock (IEC 60068-2-27:2008)*

EN 60068-2-30:2005, *Environmental testing — Part 2-30: Tests — Test Db: Damp heat, cyclic (12 h + 12 h cycle) (IEC 60068-2-30:2005)*

EN 60068-2-31:2008, *Environmental testing — Part 2-31: Tests — Test Ec: Rough handling shocks, primarily for equipment-type specimens (IEC 60068-2-31:2008)*

EN 60068-2-47:2005, *Environmental testing — Part 2-47: Tests — Mounting of specimens for vibration, impact and similar dynamic tests (IEC 60068-2-47:2005)*

EN 60068-2-64:2008,²⁾ *Environmental testing — Part 2-64: Tests — Test Fh: Vibration, broadband random and guidance (EN 60068-2-64:2008)*

EN 60068-2-78:2013, *Environmental testing — Part 2-78: Tests — Test Cab: Damp heat, steady state (IEC 60068-2-78:2012)*

¹⁾ As impacted by EN 55011:2016/A1:2017, EN 55011:2016/A2:2021 and EN 55011:2016/A11:2020.

²⁾ As impacted EN 60068-2-64:2008/A1:2019.

EN 60529:1991,³⁾ *Degrees of protection provided by enclosures (IP Code) (IEC 60529:1989)*

EN 61000-4-2:2009, *Electromagnetic compatibility (EMC) — Part 4-2: Testing and measurement techniques — Electrostatic discharge immunity test (IEC 61000-4-2:2008)*

EN 61000-4-4:2012, *Electromagnetic compatibility (EMC) — Part 4-4: Testing and measurement techniques — Electrical fast transient/burst immunity test (IEC 61000-4-4:2012)*

EN 61000-4-5:2014,⁴⁾ *Electromagnetic compatibility (EMC) — Part 4-5: Testing and measurement techniques — Surge immunity test (IEC 61000-4-5:2014)*

EN IEC 61000-4-3:2020, *Electromagnetic compatibility (EMC) — Part 4-3 : Testing and measurement techniques — Radiated, radio-frequency, electromagnetic field immunity test (IEC 61000-4-3:2020)*

EN IEC 61000-4-6:2023, *Electromagnetic compatibility (EMC) — Part 4-6: Testing and measurement techniques — Immunity to conducted disturbances, induced by radio-frequency fields (IEC 61000-4-6:2023)*

EN IEC 61000-4-11:2020,⁵⁾ *Electromagnetic compatibility (EMC) — Part 4-11: Testing and measurement techniques — Voltage dips, short interruptions and voltage variations immunity tests for equipment with input current up to 16 A per phase (IEC 61000-4-11:2020)*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 13857-1:2025 apply.

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

- ISO Online browsing platform: available at <https://www.iso.org/obp>
- IEC Electropedia: available at <https://www.electropedia.org/>

4 Test methods for electronic initiation systems

4.1 Verification of completeness of HAZOP

4.1.1 Principle

The functionality of the elements of electronic initiation systems and their interactions depends on the electronic design as well as firmware and/or software. The hazards arising from such complex systems need to be studied in detail.

4.1.2 Test apparatus

No test apparatus needed for this test.

4.1.3 Preparation of test sample

No preparation of test sample needed for this test.

³⁾ As impacted by EN 60529:1991/corrigendum May 1993, EN 60529:1991/A1:2000, EN 60529:1991/A2:2013, EN 60529:1991/A2:2013/AC:2019-02 and EN 60529:1991/AC:2016-12.

⁴⁾ As impacted by EN 61000-4-5:2014/A1:2017.

⁵⁾ As impacted by EN IEC 61000-4-11:2020/AC:2020-06 and EN IEC 61000-4-11:2020/AC:2022-10.