



SLOVENSKI STANDARD

SIST EN 13763-27:2025

01-december-2025

Eksplozivi za civilno uporabo - Detonatorji in zakasnilniki - 27. del: Preskusne metode za elektronske sisteme za aktiviranje

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

Explosivstoffe für zivile Zwecke - Zünder und Sprengschnurverzögerer - Teil 27: Prüfverfahren für elektronische Zündsysteme

Explosifs à usage civil - Détonateurs et relais pour cordeau détonant - Partie 27 : Méthodes d'essai pour systèmes d'amorçage électroniques

Ta slovenski standard je istoveten z: EN 13763-27:2025

SIST EN 13763-27:2025

<https://standards.sist.si/catalog/standards/sist-d8aa6375-a639-4986-b305-2d89c7892a6d/sist-en-13763-27-2025>

ICS:

71.100.30	Eksplozivi. Pirotehnika in ognjemeti	Explosives. Pyrotechnics and fireworks
-----------	--------------------------------------	--

SIST EN 13763-27:2025

en,fr,de

EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

EN 13763-27

October 2025

ICS 71.100.30

Supersedes CEN/TS 13763-27:2003

English Version

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

Explosifs à usage civil - Détonateurs et relais pour
cordeau détonant - Partie 27 : Méthodes d'essai pour
systèmes d'amorçage électroniques

Explosivstoffe für zivile Zwecke - Zünder und
Sprengschnurverzögerer - Teil 27: Prüfverfahren für
elektronische Zündsysteme

This European Standard was approved by CEN on 29 September 2025.

CEN 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 CEN-CENELEC Management Centre or to any CEN 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 CEN member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

CEN members are the national standards bodies of 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 United Kingdom.

SIST EN 13763-27:2025

<https://standards.iteh.ai/catalog/standards/sist/d8aab375-a639-498b-b305-2db9e7892a6d/sist-en-13763-27-2025>



EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

Contents

Page

European foreword	7
1 Scope.....	9
2 Normative references.....	9
3 Terms and definitions	10
4 Test methods for electronic initiation systems	10
4.1 Verification of completeness of HAZOP	10
4.1.1 Principle	10
4.1.2 Test apparatus	10
4.1.3 Preparation of test sample	10
4.1.4 Procedure	11
4.1.5 Expression of result	11
4.1.6 Test report.....	11
4.2 Verification of uniqueness of fire command.....	11
4.2.1 Principle	11
4.2.2 Test apparatus	11
4.2.3 Preparation of test sample	11
4.2.4 Procedure	11
4.2.5 Expression of result	11
4.2.6 Test report.....	11
4.3 Verification of the latency of electronic initiation systems.....	12
4.3.1 Principle	12
4.3.2 Test apparatus	12
4.3.3 Preparation of test sample	12
4.3.4 Procedure	12
4.3.5 Expression of results	12
4.3.6 Test report.....	12
4.4 Verification of data error detection on transmitted information in electronic initiating systems	13
4.4.1 Principle	13
4.4.2 Test apparatus	13
4.4.3 Preparation of test sample	13
4.4.4 Procedure	13
4.4.5 Expression of results	13
4.4.6 Test report.....	13
4.5 Verification of the electromagnetic compatibility of electronic initiation systems	14
4.5.1 General.....	14
4.5.2 Verification of the resistance to high-level conducted and radiated electromagnetic disturbances	14
4.5.3 Verification of the resistance to low-level conducted and radiated electromagnetic disturbances	16
4.5.4 Verification of the resistance to surge	19
4.5.5 Verification of the resistance to electrical fast transients and bursts.....	22
4.5.6 Verification of the resistance to voltage dips and short interruptions	25
4.5.7 Verification of the resistance to electrostatic discharge	28
4.5.8 Verification of Radio Frequency emission.....	30

4.6	Verification of delay accuracy of electronic initiation systems.....	32
4.6.1	Principle.....	32
4.6.2	Test apparatus.....	32
4.6.3	Preparation of test sample.....	33
4.6.4	Procedure.....	35
4.6.5	Expression of result.....	36
4.6.6	Test report.....	36
5	Test methods for electronic detonators.....	37
5.1	Verification of the resistance to overvoltage of electronic detonators with leading wires	37
5.1.1	Principle.....	37
5.1.2	Test apparatus.....	37
5.1.3	Preparation of test sample.....	37
5.1.4	Procedure.....	38
5.1.5	Expression of results.....	39
5.1.6	Test report.....	39
5.2	Verification of resistance to dynamic pressure of electronic detonators.....	40
5.2.1	Principle.....	40
5.2.2	Test apparatus.....	40
5.2.3	Preparation of test sample.....	40
5.2.4	Procedure.....	41
5.2.5	Expression of results.....	43
5.2.6	Test report.....	43
5.3	Verification of resistance to slow temperature changes of electronic detonators.....	43
5.3.1	Principle.....	43
5.3.2	Test apparatus.....	44
5.3.3	Preparation of test sample.....	44
5.3.4	Procedure.....	44
5.3.5	Expression of result.....	44
5.3.6	Test report.....	44
5.4	Verification of resistance to rapid temperature change of electronic detonators.....	45
5.4.1	Principle.....	45
5.4.2	Test apparatus.....	45
5.4.3	Preparation of test sample.....	45
5.4.4	Procedure.....	45
5.4.5	Expression of result.....	45
5.4.6	Test report.....	45
5.5	Verification of safety against unintended initiation due to electric energy storage in the detonator.....	46
5.5.1	Principle.....	46
5.5.2	Test apparatus.....	46
5.5.3	Preparation of test sample.....	46
5.5.4	Procedure.....	46
5.5.5	Expression of results.....	46
5.5.6	Test report.....	46
5.6	Verification of defined ways of firing electronic detonators.....	47
5.6.1	Principle.....	47
5.6.2	Test apparatus.....	47
5.6.3	Preparation of test sample.....	47
5.6.4	Procedure.....	47
5.6.5	Expression of results.....	47
5.6.6	Test report.....	47

5.7	Verification of discharge of firing capacitors of electronic detonators	47
5.7.1	Principle	47
5.7.2	Test apparatus	47
5.7.3	Preparation of test sample	48
5.7.4	Procedure	48
5.7.5	Expression of results	48
5.7.6	Test report.....	48
5.8	Verification of fuse head current of electronic detonators	49
5.8.1	Principle	49
5.8.2	Test apparatus	49
5.8.3	Preparation of test sample	49
5.8.4	Procedure	49
5.8.5	Expression of result	49
5.8.6	Test report.....	49
5.9	Verification of autonomous operation of electronic detonators.....	50
5.9.1	Principle	50
5.9.2	Test apparatus	50
5.9.3	Preparation of test sample	50
5.9.4	Procedure	50
5.9.5	Expression of results	51
5.9.6	Test report.....	51
6	Test methods for firing units, programming units, testing units and control units of electronic initiation systems	51
6.1	Verification of the maximum output current and the maximum transient output energy pulse of programming units and testing units	51
6.1.1	Principle	51
6.1.2	Test apparatus	51
6.1.3	Preparation of test sample	52
6.1.4	Procedure	52
6.1.5	Expression of test result.....	53
6.1.6	Test report.....	53
6.2	Verification of the insulation resistance of firing units, programming units and testing units.....	53
6.2.1	Principle	53
6.2.2	Test apparatus	54
6.2.3	Preparation of test sample	54
6.2.4	Procedure	54
6.2.5	Expression of results	54
6.2.6	Test report.....	54
6.3	Verification of the resistance to climatic and mechanical stress of firing units, programming units, testing units and control units	54
6.3.1	Preparation of test sample	54
6.3.2	Verification of the resistance to high temperature	55
6.3.3	Verification of the resistance to rapid temperature changes.....	56
6.3.4	Verification of the resistance to damp heat – first cycle	57
6.3.5	Verification of the resistance to low temperatures.....	59
6.3.6	Verification of the resistance to damp heat – remaining five cycles.....	60
6.3.7	Verification of the resistance to shock of units.....	61
6.3.8	Verification of the resistance to vibration of units.....	62
6.3.9	Verification of the resistance to dropping of units	64
6.3.10	Verification of the resistance to damp heat – steady-state.....	65
6.3.11	Verification of the resistance against ingress of objects or liquids	66

6.4	Verification of system response in case of faults leading to inadvertent initiation or misfires of electronic detonators.....	68
6.4.1	Principle.....	68
6.4.2	Test apparatus.....	68
6.4.3	Preparation of test sample.....	68
6.4.4	Procedure.....	68
6.4.5	Expression of result.....	69
6.4.6	Test result.....	69
6.5	Verification of fault tolerance of units of electronic initiation systems.....	69
6.5.1	Fault tolerance against unintended detonation of electronic detonators.....	69
6.5.2	Fault tolerance against unintended detonation of electric detonators.....	70
6.6	Verification of incapability of programming and testing units to submit a command to fire electronic detonators.....	71
6.6.1	Principle.....	71
6.6.2	Test apparatus.....	71
6.6.3	Preparation of test sample.....	71
6.6.4	Procedure.....	71
6.6.5	Expression of results.....	71
6.6.6	Test report.....	72
6.7	Verification of maximum duration of the firing window.....	72
6.7.1	Principle.....	72
6.7.2	Test apparatus.....	72
6.7.3	Preparation of test sample.....	72
6.7.4	Procedure.....	72
6.7.5	Expression of results.....	72
6.7.6	Test report.....	73
6.8	Verification of user confirmation to fire.....	73
6.8.1	Principle.....	73
6.8.2	Test apparatus.....	73
6.8.3	Preparation of test sample.....	73
6.8.4	Procedure.....	73
6.8.5	Expression of test result.....	73
6.8.6	Test report.....	73
6.9	Verification of information about blast parameters provided by the units of electronic initiating systems.....	74
6.9.1	Principle.....	74
6.9.2	Test apparatus.....	74
6.9.3	Preparation of test sample.....	74
6.9.4	Procedure.....	74
6.9.5	Expression of test result.....	74
6.9.6	Test report.....	74
6.10	Verification of remote firing systems entering safe state.....	75
6.10.1	Principle.....	75
6.10.2	Test apparatus.....	75
6.10.3	Preparation of test sample.....	75
6.10.4	Procedure.....	75
6.10.5	Expression of test result.....	75
6.10.6	Test report.....	75
6.11	Verification of access protection of updates for units of electronic initiation systems.....	76
6.11.1	Principle.....	76
6.11.2	Test apparatus.....	76
6.11.3	Preparation of test sample.....	76
6.11.4	Procedure.....	76