
G]ghYa]'nUcX_f]j Ub^Y]b^Uj `^Ub^Y'dcÿUFUHYf^U Ufa]fUb^Y!" "XY. BUdfUj Y'nU
U Ufa]fUb^Y!'Nj c bY'bUdfUj Y

Fire detection and fire alarm systems - Part 3: Fire alarm devices - Sounders

Brandmeldeanlagen - Teil 3: Feueralarmeinrichtungen - Akustische Signalgeber

Systemes de détection et d'alarme incendie - Partie 3: Dispositifs sonores d'alarme feu

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English Version

**Fire detection and fire alarm systems - Part 3: Fire alarm
devices - Sounders**

Systèmes de détection et d'alarme incendie - Partie 3:
Dispositifs sonores d'alarme feu

Brandmeldeanlagen - Teil 3: Feueralarmeinrichtungen -
Akustische Signalgeber

This amendment A2 modifies the European Standard EN 54-3:2001; it was approved by CEN on 27 April 2006.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for inclusion of this amendment into the relevant 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 CEN 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 CEN member into its own language and notified to the Central Secretariat has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.

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

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Foreword

This document (EN 54-3:2001/A2:2006) has been prepared by Technical Committee CEN/TC 72 "Fire detection and fire alarm systems", the secretariat of which is held by BSI.

This Amendment to the European Standard EN 54-3:2001 shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by November 2006, and conflicting national standards shall be withdrawn at the latest by May 2009.

This document has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association, and supports essential requirements of EU Directive(s).

For relationship with EU Directive(s), see informative Annex ZA, which is an integral part of this document.

Amendment 2 to this standard adds requirements for voice sounders. This involves changes to the Scope of the standard and to the definition of "fire alarm sounder" and the addition of a normative annex, Annex C. Amendment 2 also incorporates an updated version of Annex ZA that lists the performance and test requirements pertinent to voice sounders.

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

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1 Introduction

Add the following paragraphs to the Introduction:

In fire detection and fire alarm systems, voice sounders are used as alarm devices for warning the occupants of a building of the occurrence of a fire risk, using a combination of an attention drawing signal and dedicated voice message(s).

The requirements, test methods and performance criteria specified in EN 54-3:2001 for sounders are also applicable to voice sounders. Additional requirements, test methods and performance criteria specific to voice sounders are incorporated in a normative Annex C.

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2 Scope

Add a new 3rd paragraph as follows:

This standard is intended to cover voice sounders by the application of additional requirements, tests and performance criteria detailed in Annex C.

Make the existing 3rd paragraph the 4th paragraph.

3 Normative References

Replace the reference to “ISO 1210:1992, Plastics – Determination of the burning behaviour of horizontal and vertical specimens in contact with a small-flame ignition source” with the following, also throughout the text:

IEC 60695-11-10:1999, *Fire hazard testing – Part 11-10: Test flames – 50 W horizontal and vertical flame test methods*

Replace the reference to “ISO 10351:1992, Plastics – Determination of the combustibility of specimens using a 125 mm flame source” with the following, also throughout the text:

IEC 60695-11-20:1999, *Fire hazard testing – Part 11-20: Test flames – 500 W flame test methods*

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4 Terms and definitions (standards.iteh.ai)

Delete the words “without the use of a voice signal” from 3.6. The definition of fire alarm sounder to be as follows:

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3.6

fire alarm sounder

sound generating device intended to signal an audible warning of fire between a fire detection and fire alarm system and the occupants of a building

Annex C (normative)

Audible fire alarm devices – Voice sounders

Add Annex C (normative), as follows:

C.1 Voice sounder

A voice sounder is an audible fire alarm device that contains all the necessary components to generate and broadcast recorded voice messages.

C.2 General requirements

The voice sounder shall meet all of the requirements applicable to audible fire alarm devices – sounders, specified in Clause 4.

C.3 Additional requirements

C.3.1 Attention drawing signal and message broadcast sequences

C.3.1.1 The voice sounder shall be capable of producing an audible attention-drawing signal and a broadcast message or messages.

All messages related to fire safety shall be declared by the manufacturer and shall be considered by the testing authority. The worst case message(s) shall be subject to compliance testing.

NOTE When selecting the worst case message, message length, loudness and repetition timing should be considered.

C.3.1.2 For messages that require immediate action, the attention drawing signal and message sequence broadcast by the device shall be within the limits given in Table C.1.

NOTE For other messages, it is permitted to extend either or both the silence period after the broadcast message and the period within which the message is repeated.

C.3.1.3 Access to the message recording function shall be restricted as described in 4.5.4.

NOTE Persons trained in the proper use of microphones should be used to record the messages. The recordings should be made in a room with a controlled acoustic environment having an ambient noise level not greater than 30 dBA and a reverberation time not greater than 0,5 s from 150 Hz to 10 kHz.

Table C.1 — Tone and message sequence

Attention-drawing signal – lasting 2 s to 10 s
followed by:
Brief silence – lasting 0,25 s to 2 s
followed by:
Broadcast message ^{a)}
followed by:
Silence ^{b)} – lasting 0,25 s to 5 s
<p>^{a)} The time between the start of each repeated message shall not exceed 30 s.</p> <p>^{b)} The periods of silence may need to be longer than indicated in certain circumstances, for example in spaces with long reverberation times, but shall not be such that the time between the start of each repeated message exceeds 30 s.</p>

C.3.2 Synchronisation (option with requirements)

Voice sounders may interact acoustically when they are installed in close proximity. To prevent this, voice sounders may have provision for synchronising the attention drawing signal and message sequence with that of other devices of the same type. In this case, the requirements of the test described in C.5.3 shall be met.

When power interruption is used for synchronisation purpose, this shall not adversely affect the attention drawing signal or the voice message.

NOTE Synchronisation can be achieved by internal circuitry, the addition of a trigger wire connected between devices or by other means as defined by the manufacturer.

C.3.3 Marking and data

In addition to the data required by 4.6.2 the following shall be provided:

- a) full instructions on the method of message recording and loading or, if it is not possible for the user to record and load messages, a statement to this effect;
- b) information concerning the method of synchronisation or, if synchronisation is not an option, a statement that the devices may only be installed in positions where they do not interact acoustically with other devices of the same type.

C.4 General testing

C.4.1 Test schedule

The voice sounder shall be subjected to the schedule of tests given in 5.1.

C.4.2 Operational performance

Only the attention-drawing signal shall be measured when the device is tested for operational performance to 5.3.

C.5 Additional testing for voice sounders

C.5.1 Broadcast message performance

C.5.1.1 Object of the test

To verify that the output level of the broadcast message in relation to the output level of the attention drawing-signal is sufficient.

C.5.1.2 Test procedure

The following test procedure shall be applied:

- a) the sound level of the specimen to be tested shall be measured in free field conditions using the test method described in Annex A;
- b) while the attention-drawing signal of the device is being tested for operational performance to 5.3, an additional measurement shall be taken to measure the sound level of the broadcast message;
- c) the sound level of the broadcast message shall be measured as equivalent sound pressure level, L_{eq} , over a 1 min period;
- d) the sound levels of both the attention drawing signal and the broadcast message shall be measured at an angle of 15° off the axis of the specimen being tested (see Figures A.2 and A.3).

C.5.1.3 Test requirements

The voice sounder shall be deemed to comply with the requirement of this clause if the sound level of the broadcast message, L_{eq} , is not more than 6 dB below the sound level of the attention-drawing signal.

NOTE The difference in the measurement of the sound levels of the broadcast message and that of the attention-drawing signal will vary depending on the frequency of the attention-drawing signal.

C.5.2 Attention drawing signal/silence/message sequence timing

C.5.2.1 Object of the test

To verify that the duration of the attention-drawing signal, the duration of the silence period between the end of the attention-drawing signal and the start of the broadcast message, the duration of the silence period between the end of the message and the start of the next attention-drawing signal and

the total duration of the complete attention-drawing signal, silence, message sequence are within the required limits.

C.5.2.2 Test procedure

The following test procedure shall be applied:

- a) the specimen shall be connected to a suitable power supply which shall be set in turn to the maximum and minimum supply parameters declared by the manufacturer (see 4.6.2a);
- b) the duration of the tone, the two silence periods and the complete attention-drawing signal/silence/message sequence shall in turn be measured 6 times using a timing instrument accurate to 0,01 s.

C.5.2.3 Test requirements

The voice sounder shall be deemed to comply with the requirement of this sub-clause if the measurements of C.5.2.2 are within the limits specified in Table C.1.

C.5.3 Message synchronisation testing (option with requirements)

C.5.3.1 Object of the test

To show the ability of voice sounders to remain synchronised over a period of 30 min after they have been powered ON.

C.5.3.2 Test procedure

The following test procedure shall be applied:

- a) two voice sounders shall be placed in two separate areas that have no significant acoustic interaction, have a low background noise level and have low reverberation;
- b) each specimen to be tested shall be powered from suitable power supply equipment (see 5.1.2). The specimens shall be connected to a suitable power supply which shall be set in turn to the maximum and minimum supply parameters declared by the manufacturer (see 4.6.2a);
- c) if it is required by their mode of synchronisation, a trigger wire shall be connected between the two specimens under test;
- d) identical microphones shall be placed at a distance of 100 mm in front of each specimen under test. The two microphones shall be connected to a dual channel measuring instrument (see Figure C.1);
- e) the two specimens being tested shall be powered or their operation shall be triggered by the control equipment. The signal produced by the two specimens shall be compared at the start and finish of the broadcast message. The time differences between the signals at the start of the broadcast and at the end of the broadcast shall be measured and recorded. These shall be designated ΔT_S and ΔT_F respectively;
- f) the measurements shall be made when the devices are first powered ON and then, thereafter, every five minutes until the devices have been operating for 30 min. If the supply to the devices is interrupted at any point during the 30 min test period, then the test sequence shall be repeated over a new period of 30 min.