
**Vgrajeni gasilni sistemi – Sestavni deli sistemov za gašenje s plinom – 1. del:
Zahteve in preskusne metode za električne naprave za avtomatsko kontrolo in
zakasnitev proženja naprav s CO₂**

Fixed firefighting systems - Components for gas extinguishing systems - Part 1:
Requirements and test methods for electrical automatic control and delay devices

Ortsfeste Brandbekämpfungsanlagen - Bauteile für Löschanlagen mit gasförmigen
Löschmitteln - Teil 1: Anforderungen und Prüfverfahren für automatische elektrische
Steuer- und Verzögerungseinrichtungen

Installations fixes de lutte contre l'incendie - Éléments constitutifs pour installations
d'extinction a gaz - Partie 1: Exigences et méthodes d'essai pour les dispositifs
électriques automatiques de commande et de temporisation

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**Fixed firefighting systems - Components for gas extinguishing
systems - Part 1: Requirements and test methods for electrical
automatic control and delay devices**

Installations fixes de lutte contre l'incendie - Eléments
constitutifs pour installations d'extinction à gaz - Partie 1:
Exigences et méthodes d'essais applicables aux dispositifs
électriques automatiques de commande et de
temporisation

Ortsfeste Brandbekämpfungsanlagen - Bauteile für
Löschanlagen mit gasförmigen Löschmitteln - Teil 1:
Anforderungen und Prüfverfahren für automatische
elektrische Steuer- und Verzögerungseinrichtungen

This European Standard was approved by CEN on 9 January 2003.

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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 Management Centre has the same status as the official versions.

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Foreword

This document (EN 12094-1:2003) has been prepared by Technical Committee CEN /TC 191, "Fixed firefighting systems", the secretariat of which is held by BSI.

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of an identical text or by endorsement, at the latest by October 2003, and conflicting national standards shall be withdrawn at the latest by April 2006.

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.

This European Standard is part of a series concerned with gas extinguishing system components.

The following European Standards are planned to cover:

- gas extinguishing systems (EN 12094)
- sprinkler systems (EN 12259 and EN 12845)
- powder systems (EN 12416)
- explosion protection systems (EN 26184)
- foam systems (EN 13565)
- hose systems (EN 671)
- smoke and heat control systems (EN 12101)
- water spray systems¹⁾

This European Standard has the general title "Fixed firefighting systems – Components for gas extinguishing systems" and will consist of the following parts:

- Part 1: Requirements and test methods for electrical automatic control and delay devices
- Part 2: Requirements and test methods for non-electrical automatic control and delay devices
- Part 3: Requirements and test methods for manual triggering and stop devices
- Part 4: Requirements and test methods for container valve assemblies and their actuators
- Part 5: Requirements and test methods for high and low pressure selector valves and their actuators for CO₂ systems
- Part 6: Requirements and test methods for non electrical disable devices for CO₂ systems
- Part 7: Requirements and test methods for nozzles for CO₂ systems

¹⁾ under preparation

- Part 8: Requirements and test methods for flexible connectors for CO₂ systems
- Part 9: Requirements and test methods for special fire detectors
- Part 10: Requirements and test methods for pressure gauges and pressure switches
- Part 11: Requirements and test methods for mechanical weighing devices
- Part 12: Requirements and test methods for pneumatic alarm devices
- Part 13: Requirements and test methods for check valves and non-return valves
- Part 16: Requirements and test methods for odorizing devices for CO₂ low pressure systems
- Part 17: Pipe hangers
- Part 20: Requirements and test methods for compatibility of components

Annex A is normative. Annex B is informative.

This document includes a Bibliography.

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

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Introduction

It has been assumed in the preparation of this standard that the execution of its provisions is entrusted to appropriately qualified and experienced people.

All pressure data in this European Standard are given as gauge pressures in bar, unless otherwise stated.

NOTE 1 bar = 10^5 N m^{-2} = 100 kPa.

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1 Scope

This European Standard specifies requirements and test methods for electrical automatic control and delay devices (e.c.d.) for use in combination with automatic fire detection and fire alarm systems and CO₂-, Inert Gas- or Halocarbon Gas-Fire Extinguishing Systems installed in buildings.

The standard specifies compulsory functions which shall be provided on all electrical automatic control and delay devices and optional functions (options with requirements) which may be provided.

Additional functions associated with fire extinguishing can be provided, but are not covered by this standard.

2 Normative references

This European Standard incorporates by dated or undated references, provisions from other publications. These normative references are cited at the appropriate places in the text, and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies (including amendments).

EN 54-1, *Fire detection and fire alarm systems - Part 1: Introduction.*

EN 54-2, *Fire detection and fire alarm systems - Part 2: Control and indicating equipment.*

EN 54-4, *Fire detection and fire alarm systems - Part 4: Power supply equipment.*

EN 12094-2, *Fixed firefighting systems - Components for gas extinguishing systems - Part 2: Requirements and test methods for non-electrical automatic control and delay devices.*

EN 60068-1, *Environmental testing - Part 1: General and guidance (IEC 60068-1:1988 + Corrigendum 1988 + A1:1992).*

EN 60068-2-30, *Environmental testing - Part 2: Tests - Test Db and guidance: Damp heat, cyclic (12 + 12-hour cycle) (IEC 60068-2-30:1980 + A1:1985).*

prEN 60068-2-42, *IEC 60068-2-42: Environmental testing - Part 2-42: Test methods; Test Kc: Sulphur dioxide test for contacts and connections*

EN 60529, *Degrees of protection provided by enclosures (IP-Codes) (IEC 60529:1989).*

EN 60721-3-3, *Classification of environmental conditions - Part 3: Classification of groups of environmental parameters and their severities - Section 3: Stationary use at weather-protected locations (IEC 60721-3-3:1994).*

3 Terms, definitions and abbreviations

3.1 Terms and definitions

For the purposes of this European Standard the following terms and definitions apply.

3.1.1

access level

one of several states of an e.c.d. as defined in EN 54-2

NOTE In the access levels 1 to 4:

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- selected controls can be operated;
- selected manual operations can be carried out;
- selected indications are visible;
- selected information can be obtained.

3.1.2**alphanumeric display**

indicator capable of giving information by the display of messages consisting of text and/or numeric characters

3.1.3**condition**

defined status of the e.c.d. or of the gas extinguishing system, which is indicated at the e.c.d.

NOTE 1 The conditions of the e.c.d. recognised in this European Standard are the following:

- Activated Condition, when the commencing of the extinguishing control sequence is indicated;
- Pre-activated Condition, when the first of two necessary input triggering signals is indicated;
- Fault Warning Condition, when a fault is indicated;
- Disabled Condition, when the disablement of functions is indicated;
- Released Condition, when the flow of the extinguishing agent into the protected room or area is indicated;
- Quiescent Condition, when the e.c.d. is powered by power supply conforming to EN 54-4 and no other condition status of the e.c.d. is indicated.

NOTE 2 In some European countries in the quiescent condition the automatic/manual mode is indicated.

NOTE 3 The following condition of the gas extinguishing system is recognised in this European Standard:

- Blocked Condition, when the non-electrical disable device prevents the release of the extinguishing agent.

3.1.4**earth fault**

unwanted connection between earth potential and any part of the e.c.d., transmission paths to the e.c.d., or transmission paths between parts of the e.c.d.

3.1.5**field**

subdivision of a window

3.1.6**indication**

information given by an indicator

3.1.7**indicator**

device which can change its state to give information

3.1.8**module**

independent part of the program which fulfils specified functions

3.1.9**monitoring**

supervision of the operational condition of electrical and non-electrical components of the extinguishing system

3.1.10**non-volatile memory**

memory element that does not require the presence of an energy source for the retention of its contents

3.1.11**pre-discharge-warning time**

time period between the start of the warning indication and the discharge to warn personnel of impending gas release

3.1.12**program**

software necessary for an e.c.d. to comply with the requirements of this standard

NOTE

Software includes e.g. initializing data, reset and interrupt vectors, operating code, declarations.

3.1.13**reset**

operation capable of terminating the indication of the "Activated Condition", "Released Condition" or the "Fault Warning Condition"

3.1.14**running data**

alterable data subject to temporary modification during operation either automatically or by manual controls

3.1.15**silencing**

manual operation to switch off the audible signal of a sounding device which is capable of being automatically resounded by a new event

3.1.16**site specific data**

alterable data required for operation in a defined system configuration

3.1.17**transmission path**

physical connection, external to the enclosure of the e.c.d., for the transmission of information and/or power

NOTE

Examples are the connections:

- from or to a c.i.e. of a fire detection and fire alarm system, and/or
- from or to devices connected within the extinguishing system.

3.1.18**volatile memory**

memory element that requires the presence of an energy source for the retention of its content

3.1.19**window**

part or all of an alphanumeric display used for information relating to one condition at a given time

NOTE

A subdivision of the display can be realised either by mechanical separation, or under software control.

3.2 Abbreviations

For the purposes of this European Standard, the following abbreviations apply:

EN 12094-1:2003 (E)**3.2.1****c.i.e.**

control and indication equipment of an automatic fire detection and fire alarm system

3.2.2**e.c.d.**

electrical automatic control and delay device

3.2.3**f.d.a.s.**

fire detection and fire alarm system

3.2.4**p.s.e.**

power supply equipment

4 Functional requirements**4.1 General**

The e.c.d. shall be either a separate device or part of a c.i.e.

If the e.c.d. is part of a c.i.e., functions and indications required for the e.c.d. and the c.i.e., that are common to both, may be executed using the same component. In this case the requirements of this European Standard and that for the c.i.e. (see EN 54-2) shall be fulfilled.

The e.c.d. shall be powered by power supply equipment in accordance with EN 54-4.

Concerning the compulsory functions and the provided optional functions, the e.c.d. shall conform to the requirements in clauses 4, 5 and 6 together with those in 9.3 (environmental tests).

If the e.c.d. provides any of the optional functions the manufacturer shall specify which options are provided, see 8.2. The e.c.d. including these options shall be subjected to the testing and shall meet the requirements of this European Standard.

4.2 Environmental class

The e.c.d. shall be classified and specified by the manufacturer for one of the classes as indicated below depending upon the intended ambient conditions:

- Class A: temperature range of - 5 °C to + 40 °C;
- Class B: temperature range of - 20 °C to + 50 °C;
- Class C: temperature range of - 5 °C to + 40 °C and corrosive atmosphere class 3C4 of EN 60721-3-3;
- Class D: temperature range of - 20 °C to + 50 °C and corrosive atmosphere class 3C4 of EN 60721-3-3.

4.3 Signal processing and indication**4.3.1 General**

The e.c.d. shall be designed to receive, process and indicate signals for each flooding zone.

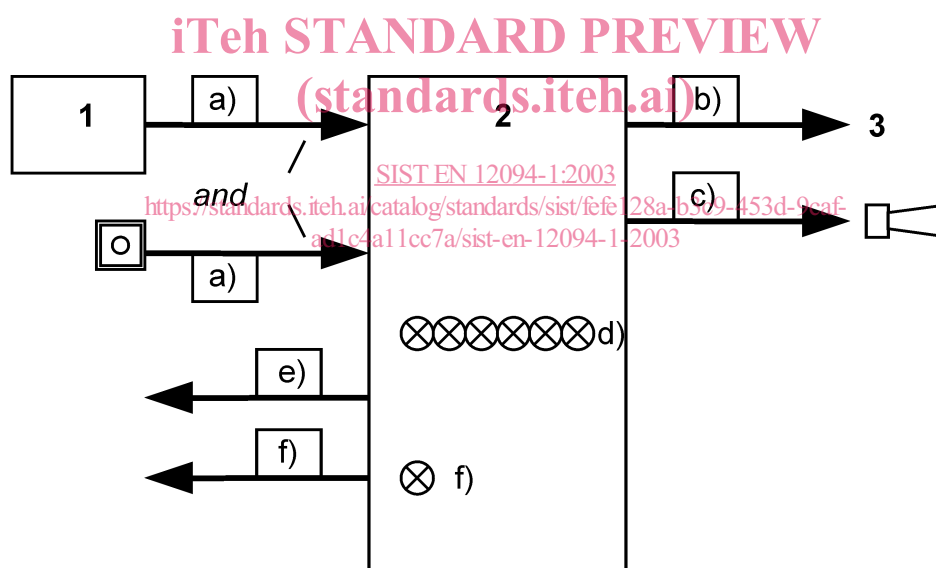
All processing of the functions necessary for the electrical control of the fire extinguishing installation shall be carried out by the e.c.d..

4.3.2 Compulsory and optional functions

The e.c.d. shall be able to carry out the following compulsory functions (see also Figure 1):

- Reception and processing of at least one input triggering signal from an f.d.a.s. and an input triggering signal from manual triggering device(s) connected directly to the e.c.d. (see also 4.4);
- On receipt of the input triggering signal(s), transmission of the extinguishing signal (see also 4.5, 4.3.2 g) and 4.17);
- On receipt of the input triggering signal(s) activation of alarm devices (see also 4.6);
- Indication of each condition unambiguously e.g. activated condition, fault warning condition (see also 4.7 to 4.16);
- Transmission of the information of the incorrect status of components as specified in 4.19 (monitoring), if provided, and of the information of the fault warning condition (see also 4.14 and 4.19);
- Transmission of the information of the released condition (see also 4.11);

If the information is transmitted to automatic routing equipment E as defined in EN 54-1 the transmission to E shall be indicated visibly at access level 1 by a separate light emitting indicator and/or by an alphanumeric display in a clearly identifiable way.



Key

- Fire detection and fire alarm system (f.d.a.s.)
- Electrical control device (e.c.d.)
- Release equipment

NOTE Functions a) to f) per flooding zone; outputs e) and f) at least common for each function. The indicator f) is only compulsory in the case of a connection as specified in EN 54-1.

Figure 1 — Compulsory functions

The e.c.d. may be able to carry out the following optional functions (options with requirements), (see also Figure 2):

- Delay the extinguishing signal (see 4.3.2 b)) for a given period of time which is known as a pre-discharge-warning time (see also 4.17);