

---

---

**Fire detection and alarm systems —**  
**Part 13:**  
**Compatibility assessment of system**  
**components**

*Systèmes de détection et d'alarme d'incendie —*

*Partie 13: Estimation de la compatibilité des composants d'un système*



This document is a preview generated by EKO



**COPYRIGHT PROTECTED DOCUMENT**

© ISO 2020

All rights reserved. Unless otherwise specified, or required in the context of its implementation, no part of this publication may be reproduced or utilized otherwise in any form or by any means, electronic or mechanical, including photocopying, or posting on the internet or an intranet, without prior written permission. Permission can be requested from either ISO at the address below or ISO's member body in the country of the requester.

ISO copyright office  
CP 401 • Ch. de Blandonnet 8  
CH-1214 Vernier, Geneva  
Phone: +41 22 749 01 11  
Email: [copyright@iso.org](mailto:copyright@iso.org)  
Website: [www.iso.org](http://www.iso.org)

Published in Switzerland

# Contents

Page

<b>Foreword</b>	<b>iv</b>
<b>Introduction</b>	<b>vi</b>
<b>1 Scope</b>	<b>1</b>
<b>2 Normative references</b>	<b>1</b>
<b>3 Terms, definitions and abbreviated terms</b>	<b>2</b>
3.1 Definitions	2
3.2 Abbreviated terms	3
<b>4 Requirements</b>	<b>3</b>
4.1 Conformance	3
4.2 General system requirements	4
4.3 Transmission path(s) (TP)	5
4.3.1 General	5
4.3.2 TP using wires	5
4.3.3 TP using radio frequency links	5
4.3.4 TP using optical fibres	5
4.3.5 Network TP	5
<b>5 Assessment methods and tests</b>	<b>6</b>
5.1 General	6
5.2 Provision of equipment and supporting information and tools	7
5.3 Configuration	7
5.3.1 General	7
5.3.2 Configuration at field level for assessment	7
5.3.3 Configuration at control level for network assessment	8
5.4 Standard atmospheric conditions for testing	8
5.5 Functional test for compatibility assessment on field level	8
5.5.1 The objective of the test	8
5.5.2 Test schedule	8
5.5.3 Functional tests for compatibility in the different conditions	9
5.6 Functional tests for connectability assessment on field level	13
5.6.1 The objective of the test	13
5.6.2 Test schedule	13
5.6.3 Functional test for connectability	13
<b>6 Test report</b>	<b>13</b>
<b>7 Marking</b>	<b>14</b>
<b>8 Data</b>	<b>14</b>
8.1 General	14
8.2 Documentation for compatibility	14
8.3 Documentation for connectability	14
8.4 Software documentation	15
<b>Annex A (informative) Example of levels used in FDAS</b>	<b>16</b>
<b>Annex B (informative) Classification of functions of the FDAS</b>	<b>17</b>
<b>Annex C (informative) Example methodology for theoretical analysis</b>	<b>19</b>
<b>Annex D (normative) Software design documentation</b>	<b>22</b>
<b>Annex E (informative) Flowchart for assessment of compatibility/connectability</b>	<b>24</b>
<b>Annex F (informative) Functions of a fire detection and alarm systems</b>	<b>25</b>

## Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see [www.iso.org/directives](http://www.iso.org/directives)).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see [www.iso.org/patents](http://www.iso.org/patents)).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see [www.iso.org/iso/foreword.html](http://www.iso.org/iso/foreword.html).

This document was prepared by Technical Committee ISO/TC 21, *Equipment for fire protection and fire fighting*, Subcommittee SC 3, *Fire detection and alarm systems*.

This second edition cancels and replaces the first edition (ISO 7240-13:2005), which has been technically revised.

The main changes compared to the previous edition are as follows:

- This edition takes into account new techniques in communication and the availability of new technologies and concepts.
- This edition is applicable to electrical wires, optical fibre or radio frequency connections. The previous edition was only applicable to electrical wires.
- Clarification introduced that it is possible to use this document to establish compatibility with fire protection equipment such as sprinkler flow switches and electrically activated sprinkler heads.
- Levels (field, control and management) and a network transmission path for the basis of system configuration introduced.
- References to EN standards have been replaced with the appropriate IEC standard references.
- Introduction of [Annex A](#), Example of levels used in FDAS.
- Introduction of [Annex B](#), Classification of functions of the FDAS.
- Introduction of [Annex C](#), Example methodology for theoretical analysis.
- Introduction of [Annex D](#), Software design documentation.
- Introduction of [Annex E](#), Flowchart for assessment of compatibility/connectability.
- Introduction of [Annex F](#), previously [Annex A](#), upgraded to the latest fire detection and alarm system functions diagram from ISO 7240-1.

A list of all parts in the ISO 7240 series can be found on the ISO website.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at [www.iso.org/members.html](http://www.iso.org/members.html).

## Introduction

The purpose of fire detection is to detect a fire at the earliest practicable moment and to give signals and indications so that appropriate action can be taken.

The purpose of a fire alarm is, at a minimum, to give audible and/or visible signals to the occupants of a building who may be at risk from fire.

A fire detection and alarm system including voice alarm systems combines the functions of detection and alarm in a single system and typically consists of a number of inter-linked components including automatic fire detectors, manual call points and alarm devices. These components are connected to control and indicating equipment by means of one or more transmission paths. All system components, including the control and indicating equipment, are also directly or indirectly connected to a power supply.

A separate voice alarm system can be assessed for compatibility and connectability independently of the fire detection and alarm system.

ISO 7240-1 provides additional information about the components performing these functions, listed in [Annex F](#) of this document.

A fire protection system and/or building management system, or remote fault and fire alarm monitoring stations that are linked to a fire detection and alarm system, are not considered part of the fire detection and alarm system.

It is necessary for all of the components constituting the fire detection and alarm system to be compatible or connectable and it is necessary that requirements relating to the performance of the overall system be fulfilled.

Differentiation is made between components classified as components type 1 and other components, classified as components type 2.

As the possible configurations of fire detection and alarm systems are unlimited, the assessment is only carried out on the configuration(s) declared by the applicant.

This document recognizes that it is not practical to assess the compatibility or connectability of components in all possible configurations. Methods of assessment are specified to reach an acceptable degree of confidence within pre-determined operational and environmental conditions.

National application guidelines (also known as codes of practice) also contain system requirements.

System requirements are also included for fire detection and alarm systems which are linked to fire protection systems and/or other systems (for example: fire suppression and building management systems).

The intended use of this document is to demonstrate the compatibility and connectability of components, even if they are not defined by an ISO standard.

# Fire detection and alarm systems —

## Part 13:

## Compatibility assessment of system components

### 1 Scope

This document specifies the requirements for compatibility and connectability assessment of the components of fire detection and alarm systems, fire protection systems and voice alarm systems.

This document only includes system requirements when these are necessary for compatibility assessment.

This document also specifies requirements for the integrity of the fire detection and fire alarm system when connected to other systems.

This document does not specify the manner in which the system is designed, installed and used in any particular application.

This document does not cover components or functions which are not included in the fire detection and alarm systems (FDAS), such as functions performed by a building management system.

Methods of assessment are specified to permit an acceptable degree of confidence within predetermined operational and environmental conditions to be achieved.

The requirements for the transmission path used for a distributed function are covered by a relevant ISO standard and not by this document.

This document is applicable to systems where the components are connected to control-and-indicating equipment (CIE) and where the components are interconnected by electrical wires or optical fibre or by radio frequency links or by any combination of these.

ISO 7240-25 provides additional information and requirements about systems using radio frequency links.

**NOTE** Other International Standards are expected to cover the requirements of other systems to which the fire detection and fire alarm system is connected.

### 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.

ISO 7240-1, *Fire detection and alarm systems — Part 1: General and definitions*

ISO 7240-2, *Fire detection and alarm systems — Part 2: Fire detection control and indicating equipment*

ISO 7240-4, *Fire detection and alarm systems — Part 4: Power supply equipment*

ISO 7240-16, *Fire detection and alarm systems — Part 16: Sound system control and indicating equipment*

ISO 7240-25, *Fire detection and fire alarm systems — Part 25: Components using radio transmission paths*

IEC 62599-1, *Alarm systems — Part 1: Environmental test methods*

IEC 62599-2, *Alarm systems — Part 2: Electromagnetic compatibility — Immunity requirements for components of fire and security alarm systems*

### 3 Terms, definitions and abbreviated terms

#### 3.1 Definitions

For the purposes of this document, the terms and definitions given in ISO 7240-1 and the following apply.

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

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

##### 3.1.1

##### **compatibility of the component type 1**

ability of a *component type 1* (3.1.2) to operate with control-and-indicating equipment

- within the limits specified for each component,
- within the specified limits given by the relevant parts of the ISO 7240 series or the ISO 6182 series if available and if not available, given by either a National fire equipment standard or by the applicant,
- within specified configurations of systems

##### 3.1.2

##### **component type 1**

device performing a function for the protection of life and/or property, which is required by national guidelines or regulations

##### 3.1.3

##### **component type 2**

device other than a type 1 device which is connected to a *component type 1* (3.1.2) performing a function for the protection of life and/or property, which is not required by national guidelines or regulations

EXAMPLE A printer used for listing fire events.

##### 3.1.4

##### **configuration**

topological arrangement of components connected through transmission paths to a control and indicating equipment

##### 3.1.5

##### **connectability of component type 2**

ability of a *component type 2* (3.1.3) to operate without jeopardizing the performance of the fire detection and fire alarm system

##### 3.1.6

##### **control level**

level where control and indication functions are provided

Note 1 to entry: See [Figure A.1](#).

Note 2 to entry: CIE and VACIE belong to this level.

##### 3.1.7

##### **field level**

level where detection, activation and fire alarm functions are provided

Note 1 to entry: See [Figure A.1](#).