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Fire detection and alarm systems —

Part 30: Design, installation, commissioning and service of video fire detector systems

Systèmes de détection et d'alarme d'incendie —

Partie 30: Conception, installation, prise en charge et entretien des systèmes de détection incendie par vidéo

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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).

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).

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.

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*.

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.

Introduction

The installation of a video fire detection system (VFDS) can only be successfully accomplished if the following conditions are fulfilled:

— materials are of a suitable quality;

— special knowledge in the field of video fire detection (VFD) is implemented;

— skilled personnel carry out the work.

Although the quality of the material can be ensured by adherence to applicable standards and quality audits, the overall effectiveness of an installation depends widely on the quality of work, the experience of the designer and installer, and regular service.

This document has been prepared by ISO/TC 21/SC 3. A number of existing national codes and standards were reviewed during the preparation of this document. As VFD technology is significantly different from conventional fire detection technology, different considerations need to be addressed and therefore a document specifying the installation of VFDSs has been developed. While specific to VFDSs, this document has the same objective of early fire detection as ISO 7240-7. This document specifies the minimum requirements for fire detection installation using equipment conforming ISO/TS 7240-29.

Fire detection and alarm systems —

Part 30: Design, installation, commissioning and service of video fire detector systems

1 Scope

This document specifies the design, installation, commissioning and service requirements for video fire detector systems (VFDS; see ISO/TS 7240-29), which are primarily intended to provide early detection of fire within one or more specified indoor areas for the protection of lives and equipment. The VFDS can also serve to protect from specific defined risks. The VFDS can be an independent fire detection system or can be used in conjunction with a fire detection and alarm system (FDAS; see ISO 7240-1:2014, Figure 1).

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

ISO 7240-13, *Fire detection and alarm systems — Part 13: Compatibility assessment of system components*

ISO 7240-14, *Fire detection and alarm systems — Part 14: Design, installation, commissioning and service of fire detection and fire alarm systems in and around buildings*

3 Terms, definitions and abbreviated terms

3.1 Terms and definitions

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

3.1.1
alarm zone
geographic subdivision of the premises in which one or more alarm devices are installed and for which a common zonal alarm indication is provided

3.1.2
detection zone
geographic subdivision of the premises in which one or more points are installed and for which a common zonal detection indication is provided

3.1.3
field of view
image captured by the video fire detector

Note 1 to entry: Field of view is a 2D projection/representation of the objects within a 3D rectangular pyramid.

3.1.4
active field of view
area in field of view in which smoke and/or flame can be detected by the video fire detector

Note 1 to entry: The active field of view takes into consideration any borders to the field of view where detection is not effective and areas within the field of view deliberately masked to avoid nuisance alarms.

3.1.5
illuminator
light source, internal or external to the video fire detector that assists the equipment to operate in low ambient light conditions

3.1.6
monitored volume
3-dimensional space within a protected space that is visible in the active field of view of the video fire detector such that smoke/flame occurring in (or around) that space is detected

Note 1 to entry: The monitored volume takes into consideration the active field of view, the declared range for the video fire detector and any obstacles within the space which can potentially obscure the view.

3.1.7
protected space
the area(s) where the threat of a fire is to be detected by one or more video fire detectors

3.1.8
quiescent condition
functional condition characterized by the absence of the alarm, fault warning and disabled and test conditions

3.1.9
video fire detector
self-contained device or distributed system in which analysis of video images is performed in order to detect the presence of smoke and/or flame within the images being analyzed

3.1.10
video fire detector system
fire detection system comprising one or more video fire detectors

3.2 Abbreviated terms

AC	alternating current
AHJ	authority having jurisdiction
EMC	electromagnetic compatibility
EMI	electromagnetic interference
FDAS	fire detection and alarm system
FoV	field of view
aFoV	active field of view

FDCIE fire detection control and indicating equipment

VFD video fire detector

VFDS video fire detector system

4 Equipment and material

4.1 Quality of components

Components used as part of the VFDS shall be designed and manufactured in accordance with a recognized quality system.

The equipment manufacturer shall make available to the VFDS designer information about the manufacturer's quality assurance system to satisfy the designer that the components selected for the VFDS are suitable for the application.

4.2 Standards

Equipment used in the VFDS shall conform to the relevant part of the ISO 7240 series or other International Standards, as appropriate. The testing supporting such conformity shall be performed in a testing laboratory that meets the requirements of ISO/IEC 17025.

Note 1 Certification can be used to demonstrate conformity of the equipment to the relevant standard.

Note 2 Accreditation of the testing laboratory for the testing of equipment in accordance with the relevant standard can be used to demonstrate competence of the laboratory to perform the specific tests. Where assessment has not been made by an independent party, the designer identifies the components and describes why assessment has not been undertaken.

4.3 Environmental requirements

Each item of equipment shall be installed within an environment for which it has been certified.

Additional requirements may apply in special cases, e.g.:

— potentially explosive atmospheres;

— special electromagnetic compatibility (EMC) requirements.

4.4 Additional equipment

Additional equipment (e.g. remote terminals or graphic displays) may be included in the design of, or connected to the VFDS.

The operation of the VFDS shall not be reliant on the additional equipment.

Failure of any additional equipment shall not affect the correct operation of the VFDS.

4.5 Installation materials

Installation material (e.g. cable clamps, Catenary cable and cable trays) shall be of a suitable rating, size and strength to meet the design load requirements.

Connectors and distribution boxes shall be suitable for the size of cables used in the VFDS.

5 System functionality

5.1 Responsibility

The VFDS shall be subjected to a performance test by a qualified person to verify functionality in the field as specified by the manufacturer.

NOTE Examples of a qualified person are an installer, designer, commissioning engineer or other responsible party taking into consideration national guidelines.

The designer shall ensure that propagation of smoke from masked areas to unmasked areas is assured and detected by the VFDS. Areas that are masked to resolve nuisance alarms shall be covered by a different fire detector.

The designer shall ensure that equipment conforming to ISO/TS 7240-29 used in the VFDS has been independently assessed as being compatible with the fire detection control and indicating equipment (FDCIE), in accordance with ISO 7240-13 when connected to the FDCIE.

Where the requirements of ISO 7240-13 do not directly apply, then it may be used as a guide to prepare a suitable compatibility assessment procedure.

The designer shall ensure that devices such as motors that may cause vibration or EMI are not in direct proximity to the VFDS.

5.2 Documentation

The designer shall prepare a list of all components used in the VFDS and identify which components are compatible.

5.3 Certification

Certification of compatibility of equipment used in the VFDS shall be included in the design documentation for the VFDS.

Where assessment has not been made by an independent party, the designer shall identify the components and describe why assessment has not been undertaken.

Where the VFDS interfaces to another system (e.g. building-management system) using voltage free relay outputs, then self-assessment may be made by the designer and documented accordingly.

Where the VFDS interfaces to another system (e.g. fire alarm system) using a high-level link (e.g. serial data communication), the designer shall prepare a suitable test plan to ensure reliable interfacing, including the testing of failure and fault modes. This may be done in conjunction with the equipment manufacturer.

6 Design

6.1 Responsibilities

Design of the VFDS, including components and usage requirements, shall be undertaken in a systematic process in accordance with a quality system. A document shall be signed by a responsible person describing the scope of responsibility in such detail that undefined areas and areas overlapping with other responsibilities are avoided.

6.2 Qualifications

The design of the VFDS shall be undertaken by persons having professional qualifications or experience relevant to the scope of the particular design requirements. This may include:

— a person competent in the field of VFD and alarm technology,

— an experienced consulting company, or

— an experienced VFDS designer.

NOTE National regulations might exist for the registration and recognition of individuals with the requisite qualifications and experience. The recognition might form part of a recognized competency framework.

6.3 Documentation required for the design

The designer shall have access to documentation necessary to design the VFDS, in accordance with the requirements of this document. Documentation shall include the following:

— plans of the building;

— use of the building (where known);

— occupancy of the building (where known);

— description of the hazard, including proposed use of detection zones and alarm zones;

— description of the environmental conditions, such as:

  — temperature,

  — humidity,

  — corrosive atmosphere,

  — electromagnetic influences (e.g. areas subject to severe thunderstorms);

— description of the environment where the equipment is installed (e.g. occupancy of the building, hazardous locations);

— description of the infrastructure of the environment (e.g. traffic conditions, communications, electricity supply, fire brigade access, water supply, etc.).

The designer shall state any assumptions made and provide justifications for solutions selected.

6.4 Power supply

6.4.1 Power supply equipment

Power supply equipment for the VFDS and artificial lighting required to maintain minimum illumination in the aFoV as per 6.5 shall conform to the requirements of ISO 7240-4 or equivalent.

NOTE Standby generators are an acceptable means of maintaining adequate lighting levels.

6.4.2 Main power source

The power supply equipment shall be energized by a reliable source of supply and shall be connected taking into account national electrical wiring requirements. The main power source shall be either:

a) an AC supply from an electricity supply company; or

b) a source of quality and reliability equivalent to that in 6.4.2 a).