
Fire detection and alarm systems —
Part 11:
Manual call points

Systèmes de détection et d'alarme d'incendie —

Partie 11: Déclencheurs manuels d'alarme

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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.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

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.

ISO 7240-11 was prepared by Technical Committee ISO/TC 21, *Equipment for fire protection and fire fighting*, Subcommittee SC 3, *Fire detection and fire alarm systems*.

ISO 7240 consists of the following parts, under the general title *Fire detection and alarm systems*:

- *Part 1: General and definitions*
- *Part 2: Control and indicating equipment*
- *Part 4: Power supply equipment*
- *Part 5: Point-type heat detectors*
- *Part 6: Carbon monoxide fire detectors using electro-chemical cells)*
- *Part 7: Point-type smoke detectors using scattered light, transmitted light or ionization*
- *Part 9: Test fires for fire detectors* [Technical report]
- *Part 10: Point type flame detectors*
- *Part 11: Manual call points*
- *Part 12: Line type smoke detectors using transmitting light beam*
- *Part 13: Compatibility assessment of system components*
- *Part 14: Guidelines for drafting codes of practice for design, installation and use of fire detection and fire alarm systems in and around buildings* [Technical report]
- *Part 15: Multi-sensor fire detectors*
- *Part 21: Routing equipment*
- *Part 22: Duct sampling equipment*

The following parts are under development:

- *Part 16: Sound system control and indicating equipment*
- *Part 19: Design, installation, commissioning and service of sound systems for emergency purposes*

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Introduction

This part of ISO 7240 has been prepared up by Sub-Committee ISO/TC 21/SC3, the secretariat of which is held by SAI and is based on a European Standard EN 54-11 prepared by the European Committee for Standardization CEN/TC 72 “*Fire detection and fire alarm systems*”.

This part of ISO 7240 has been drafted on the basis of appearance and functions which should be provided on all manual call points for use in fire detection and fire alarm systems. The colours, dimensions, shapes and methods of operation are based on recognised operating principles which give confidence and recognition to the user when operated in genuine fire alarm situations.

It is important for manual call points to be recognisable and simple to use, without the need to read elaborate instructions so that anyone discovering a fire is able to use the manual call point without previous familiarity with it.

The purpose of a manual call point is to enable a person discovering a fire to initiate the operation of a fire alarm system so that appropriate measures can be taken.

The intention of this International Standard is to specify requirements for operation and reliability. The methods of operation of the manual call points covered are as follows:

- Type A: direct operation (single action);
- Type B: indirect operation (double action).

Both types require the breaking or the visible displacement by change of the position of a frangible element forming part of the front face, which is considered to be the most suitable method for general application and which act as a deterrent to the misuse of the device.

Importance has been placed on identifying the manual call point, the method by which it is activated and an indication to the user that the initiation of an alarm has been given.

The resulting standard takes into account national variances in custom and practice and language in bringing together common elements that contribute towards a standard device for use throughout the world.

The performance of manual call points is assessed from results obtained in specific tests. This part of ISO 7240 is not intended to place any other restrictions on the design and construction of such manual call points.

Fire detection and alarm systems —

Part 11: Manual call points

1 Scope

This part of ISO 7240 specifies the requirements, test methods and performance criteria for manual call points in fire detection and alarm systems in and around buildings (see ISO 7240-1). It takes into account indoor and outdoor conditions, the appearance and operation of the manual call points for type A “direct operation” and type B “indirect operation” and covers those which are simple mechanical switches, those which are fitted with simple electronic components (e.g. resistors, diodes) and those which contain active electronic components and which work with the control and indicating equipment for signalling and identifying, for example, an address or location.

This part of ISO 7240 does not cover manual call points for special applications, for example manual call points that are intrinsically safe or for use in hazardous conditions, if such applications require additional or other requirements or tests than those given in this standard.

2 Normative references

[ISO 7240-11:2005](https://standards.iteh.ai/catalog/standards/sist/05da5675-7023-4260-9f58-c2d2d109ca3b/iso-7240-11-2005)

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The following referenced documents are indispensable for the application 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 209-1, *Wrought aluminium and aluminium alloys — Chemical composition and forms of products — Part 1: Chemical composition*

ISO 3098-0, *Technical product documentation — Lettering — Part 0: General requirements*

ISO 3864, *Safety colours and safety signs*

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

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

IEC 60068-1, *Environmental testing — Part 1: General and guidance*

IEC 60068-2-1, *Environmental testing — Part 2-1. Tests: Tests A: Cold*

IEC 60068-2-2, *Environmental testing — Part 2-2: Tests: Tests B: Dry heat*

IEC 60068-2-6, *Environmental testing — Part 2-6. Tests: Test Fc: Vibration (sinusoidal)*

IEC 60068-2-18, *Environmental testing — Part 2-18. Tests: Test R and guidance: Water*

IEC 60068-2-27, *Environmental testing — Part 2-27. Tests: Test Ea and guidance: Shock*

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

IEC 60068-2-42, *Environmental testing — Part 2-42. Tests: Test Kc: Sulphur dioxide test for contacts and connections*

IEC 60068-2-78, *Environmental testing — Part 2-78. Tests: Test Cab: Damp heat, steady state*

EN 894-3, *Safety of machinery — Ergonomics requirements for the design of displays and control actuators — Part 3: Control actuators*

EN 50130-4, *Alarm Systems — Part 4: Electromagnetic compatibility — Product family standard: Immunity requirements for components of fire, intruder and social alarm systems.*

3 Terms and definitions

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

3.1 alarm condition

condition of the manual call point after the operating element has been activated

3.2 frangible element

component which is glass or has the appearance of glass and which after receiving a blow or pressure as instructed, is physically broken or is visibly displaced by change of position and remains in that condition until replaced or reset

NOTE The frangible element is intended to give protection against unintentional operation and to be a deterrent against misuse. The visible displacement of the frangible element is accepted as apparent breaking.

3.3 non-resettable frangible element

frangible element that needs to be replaced after the activation of the manual call point, in order for the manual call point to be able to return to the normal condition

3.4 resettable frangible element

frangible element that can be returned to its original position without replacement, in order for the manual call point to be able to return to the normal condition

3.5 front face

the area within the outline of the front view of the manual call point excluding the area of the operating face

NOTE See Figure 1.

3.6 manual call point

a component of a fire detection and fire alarm system which is used for the manual initiation of an alarm [ISO 7240-1]

Manual call points are divided into two types depending on the method of operation:

3.7 type A: direct operation

a manual call point in which the change to the alarm condition is automatic (i.e. without the need for further manual action) when the frangible element is broken or displaced

3.8**type B: indirect operation**

a manual call point in which the change to the alarm condition requires a separate manual operation of the operating element by the user after the frangible element is broken or displaced

3.9**normal condition**

the condition in which the frangible element is undamaged and the manual call point is operating without giving an alarm or fault signal

3.10**operating element**

mechanical and electrical switching element, part of the manual call point which initiates the alarm signal when operated

3.11**operating face**

that area of the manual call point which may be the visible part of the frangible element or the visible area behind it

NOTE See Figure 1.

3.12**special tool**

a device not normally carried by the public (e.g. a key), normally provided by the manufacturer and which is used for replacing or resetting the frangible element

NOTE It is intended to deter unauthorised access to the manual call point, while being available on site either at a defined location or from a "responsible person" familiar with and having knowledge of the system.

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4 Requirements**4.1 Compliance**

In order to comply with this part of ISO 7240, the manual call point shall meet the requirements of this clause, which shall be verified by visual inspection or engineering assessment, shall be tested as described in Clause 5 and shall meet the requirements of the tests.

4.2 Marking and data**4.2.1 Marking**

Each manual call point shall be permanently marked with the following information:

- a) a reference to this part of ISO 7240 (i.e. ISO 7240-11:2005);
- b) the name or trademark of the manufacturer or supplier;
- c) the model designation;
- d) environment category (indoor / outdoor, special environmental conditions);
- e) the wiring terminal designations;
- f) some mark(s) or code(s) (e.g. serial number or batch code), by which the manufacturer can identify, at least, the date or batch and place of manufacture, and the version number(s) of any software, contained within the manual call point.

Where any marking on the manual call point uses symbols or abbreviations not in common use then these shall be explained in the data supplied with the device.

The marking shall be visible during installation of the manual call point and shall be accessible during maintenance.

The markings shall not be placed on screws or other easily removable parts.

4.2.2 Data

Either the manual call points shall be supplied with sufficient technical, installation and maintenance data to enable their correct installation and operation or, if all of these data are not supplied with each manual call point, reference to the appropriate data sheet shall be given on, or with, each manual call point.

To enable correct operation of the manual call points, these data shall describe the requirements for the correct processing of the signals from the manual call point. This may be in the form of a full technical specification of these signals, a reference to the appropriate signalling protocol or a reference to suitable types of control and indicating equipment etc.

Additional information may be required by organisations certifying that manual call points produced by a manufacturer conform to the requirements of this part of ISO 7240.

4.3 Frangible element

4.3.1 Normal condition

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The normal condition shall be easily recognisable by the appearance of the operating face as detailed in 4.7. The frangible element shall be flat and shall not be broken, deformed or displaced.

4.3.2 Alarm condition

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Transfer from the normal condition to the alarm condition shall be achieved by the following and shall be easily recognisable by the change in the appearance of the operating face:

a) for type A manual call points:

- 1) breaking the frangible element or
- 2) displacing the frangible element as a result of the breaking or
- 3) displacing the frangible element without breaking together with changing the appearance of the front face.

b) for type B manual call points:

- 1) breaking and/or displacement of the frangible element as described in 4.3.2 a), to give access to the operating element and
- 2) manual activation of the operating element.

In addition, for type B manual call points, it shall be possible to see that the operating element is in the activated position and it shall not be possible to activate the operating element without breaking or displacing the frangible element [see 4.3.2 b)] or without the use of a special tool (see 4.6)

4.4 Indicators for alarm condition

The alarm condition shall be indicated by:

- a) for type A: the condition of the frangible element as specified in 4.3;
- b) for type B: the frangible element as described in 4.3 together with an identifiable activated position of the operating element.

The alarm condition may be additionally indicated visually by other means, for example lamps or light-emitting diodes (LEDs).

If an additional visual indicator is provided, it shall be positioned within the operating face or within the front face of the manual call point. The visual indicator shall be red, shall identify the manual call point, which released an alarm, until the alarm condition is reset and shall be visible from a distance of 2 m at up to 45° from the axis of the manual call point in any direction, in an ambient light intensity up to 500 lx. Where other conditions of the manual call point may be visually indicated, they shall be clearly distinguishable from the alarm indication, except when the manual call point is switched into a service mode.

4.5 Reset facility

It shall only be possible to reset the manual call point after operation by means of a special tool or special procedure as follows:

- a) for non-resettable frangible elements by inserting a new element;
- b) for resettable frangible elements by resetting the frangible element.

In addition, for type B manual call points, it shall only be possible to return the operating element to its normal condition by means of a special tool.

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4.6 Test facility

The manual call point shall be equipped with a facility to carry out routine testing when installed. The operation of this test facility shall:

- a) simulate the alarm condition by activating the operating element without breaking the frangible element; and
- b) allow the manual call point to be reset without breaking the frangible element.

The operation of the test facility shall only be possible using a special tool or special procedure.

4.7 Construction and design

4.7.1 Safety

When operating the frangible element injury to the operator shall not occur.

For type B manual call points the actuation force of the operating element shall meet the requirements of EN 894-3: 2000.

Corners and edges of the manual call points shall be rounded to reduce the possibility of injury.

4.7.2 Shape, dimensions and colours

4.7.2.1 Shape

The front face of the manual call point shall be symmetrical about the horizontal axis and symmetrical about the vertical axis (see Figure 1).

The operating face

- shall be approximately symmetrical about the horizontal axis and approximately symmetrical about the vertical axis (see Figure 1).
- shall be level with or recessed into the front face; it shall not project beyond the front face.
- may have a vertical offset about the horizontal centre line of the front face.

4.7.2.2 Dimensions

The dimensions of the front face a shall be not less than 85 mm and not greater than 150 mm (see Figure 1).

The dimensions of the operating face b shall be not less than $0,4a$ and not greater than $0,8a$ (see Figure 1).

The operating face offset c shall be not greater than $0,1a$ (see Figure 1).

The manual call point shall be designed so that it is capable of being mounted in accordance with the manufacturer's instructions, with the front face at least 15 mm proud of the surrounding surface.

4.7.2.3 Colours

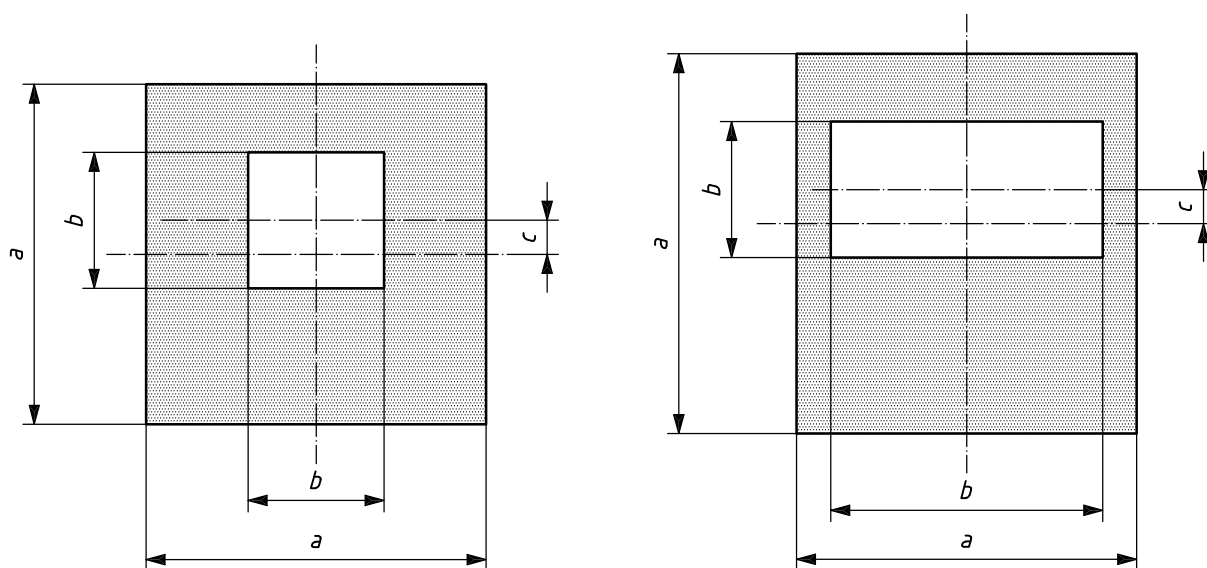
The colour of the visible surface area of the manual call point when mounted in accordance with 5.1.3 shall be red, except for

- a) the operating face;
- b) the symbols and lettering on the front face specified in 4.7.3.2;
- c) the special tool access, cable entry holes and screws.

The colour of the operating face other than symbols and lettering specified in 4.7.3.3 shall be white.

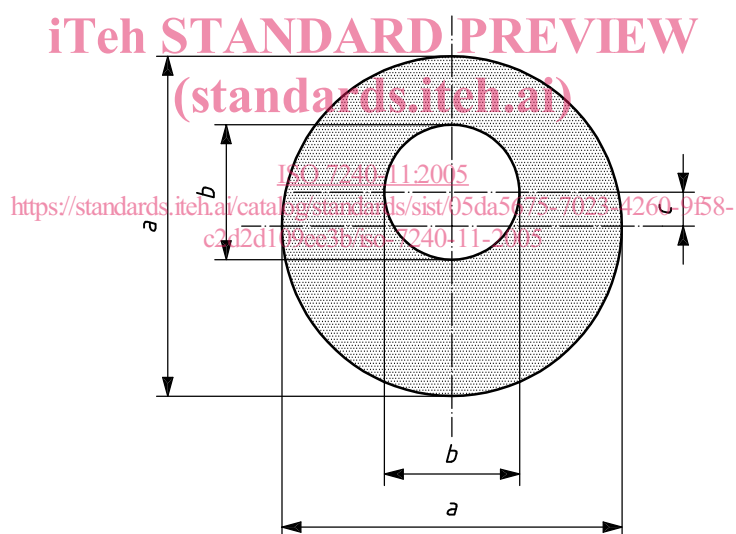
The colour of the visible part of the operating element (type B manual call point) shall be black.

NOTE Suitable red, white and black colours are specified in ISO 3864.



a) Example of a square operating face

b) Example of rectangular operating face



c) Example of round operating face

Key

- 1 front face
- 2 operating face

Limitations on the dimensions:

$$85 \text{ mm} \leq a \leq 150 \text{ mm}$$

$$0,4a \leq b \leq 0,8a$$

$$\text{offset } c \leq 0,1a$$

Figure 1 — Manual call point examples