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Sistemi za odkrivanje in javljanje požara ter alarmiranje - 11. del: Ročni javljalniki

Fire detection and fire alarm systems - Part 11: Manual call points

Brandmeldeanlagen - Teil 11: Handfeuermelder

Systèmes de détection et d'alarme incendie - Partie 11: Déclencheurs manuels d'alarme

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Fire detection and fire alarm systems - Part 11: Manual call points

Systèmes de détection et d'alarme incendie - Partie 11:
Déclencheurs manuels d'alarme

Brandmeldeanlagen - Teil 11: Handfeuermelder

This draft European Standard is submitted to CEN members for enquiry. It has been drawn up by the Technical Committee CEN/TC 72.

If this draft becomes a European Standard, CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration.

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Contents	Page
Foreword.....	3
Introduction	4
1 Scope	4
2 Normative references.....	5
3 Terms and definitions	6
4 Requirements	7
5 Tests methods	15
6 Evaluation of conformity	35
7 Classification	42
8 Marking, labelling and packaging.....	42
9 Data.....	42
Annex A (normative) Test apparatus for test for operation	43
Annex B (informative) Test apparatus for test for non-operation	45
Annex C (informative) Test apparatus for the impact test.....	46
Annex ZA (informative) Clauses of this European Standard addressing the provisions of the EU Construction Products Directive (89/106/EEC).....	50
Annex ZB (informative) Relationship between this European Standard and the provisions of EU Directive 73/23/EEC (Low Voltage).....	59

Foreword

This document (prEN 54-11:2013) has been prepared by Technical Committee CEN/TC 72 "Fire detection and fire alarm systems", the secretariat of which is held by BSI.

This document is currently submitted to the CEN Enquiry.

This document will supersede EN 54-11:2001.

This document presents the consolidated version of EN 54-11:2001 and EN 54-11:2001/A1:2005 and includes modifications which are indicated by a straight line in the margin of the text or in Tables 2, 9 and in Annex ZA the changes are indicated by text in bold italics.

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Introduction

This European Standard 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 member of the general public discovering a fire to initiate the operation of a fire alarm system so that appropriate measures can be taken.

The intention of this European 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. This action should be easy enough to be capable of being performed by any members of the general public.

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 Europe.

1 Scope

This European Standard specifies the requirements and methods of test for manual call points in fire detection and fire alarm systems in and around buildings. 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 panels for signalling and identifying, for example, an address or location.

This European Standard specifies also requirements for the evaluation of conformity and the marking of manual call points (see Annex ZA).

This European standard does not cover manual call points for special applications, for example flame proof manual call points, or for use in hazardous conditions but can be used in conjunction with additional requirements or tests required for these special applications.

Manual call points for special applications, such as ATEX will require testing above and beyond this European standard however should they by design in addition to meeting the specific requirements of their application be compliant with all clauses of this European standard they are considered to be covered by the standard.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 54-1:1996, *Fire detection and fire alarm systems — Part 1: Introduction*

EN 894-3:2000, *Safety of machinery — Ergonomics requirements for the design of displays and control actuators — Part 3: Control actuators*

EN 894-3:2000/A1:2008, *Safety of machinery — Ergonomics requirements for the design of displays and control actuators — Part 3: Control actuators*

EN 50130-4:2011, *Alarm systems — Part 4: Electromagnetic compatibility — Product family standard: Immunity requirements for components of fire, intruder and social alarm systems*

EN 50130-4:1995/A1:1998, *Alarm systems — Part 4: Electromagnetic compatibility — Product family standard: immunity requirements for components of fire, intruder and social alarm systems*

EN 50130-4:1995/A2:2003, *Alarm systems — Part 4: Electromagnetic compatibility — Product family standard: immunity requirements for components of fire, intruder and social alarm systems*

EN 60068-1:1994, *Environmental testing — Part 1: General and guidance (IEC 60068-1:1988 + A1:1992 + corrigendum October 1988)*

EN 60068-2-1:2007, *Environmental testing — Part 2-1: Tests — Tests A: Cold (IEC 60068-2-1:2007)*

EN 60068-2-2:2007, *Basic environmental testing procedures — Part 2-2: Tests — Tests B: Dry heat (IEC 60068-2-2:2007)*

EN 60068-2-6:2007, *Environmental testing — Part 2-6: Tests — Tests Fc: Vibration (sinusoidal) (IEC 60068-2-6:1995 + corrigendum 2007)*

EN 60068-2-18:2001, *Environmental testing — Part 2-18: Tests — Test R and guidance: Water (IEC 60068-2-18:2000)*

EN 60068-2-27:2009, *Basic environmental testing procedures — Part 2-27: Tests — Test Ea and guidance: Shock (IEC 60068-2-27:2009)*

EN 60068-2-30:2005, *Environmental testing — Part 2-30: Tests — Test Db: Damp heat, cyclic (12 h + 12 h cycle) (IEC 60068-2-30:2005)*

EN 60068-2-42:2003, *Environmental testing — Part 2-42: Tests — Test Kc: Sulphur dioxide test for contacts and connections (IEC 60068-2-42:2003)*

EN 60068-2-78:2001, *Environmental testing - Part 2-78: Tests — Test Cab: Damp heat, steady state (IEC 60068-2-78:2001)*

EN ISO 3098-0:1997, *Technical product documentation — Lettering — Part 0: General requirements (ISO 3098-0:1997)*

EN ISO 9001:2008, *Quality management systems — Requirements (ISO 9001:2000)*

ISO 209-1:1989, *Wrought aluminium and aluminium alloys — Chemical composition and forms of products — Part 1: Chemical composition*

prEN 54-11:2013 (E)

ISO 3864-1:2011, *Graphical symbols — Safety colours and safety signs — Part 1: Design principles for safety signs in workplaces and public areas*"

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 54-1:2011 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 1 to entry: 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.

3.2.1**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

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3.2.2**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

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3.3**front face**

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

Note 1 to entry: See Figures 1 and 2, item 1.

3.4**manual call point**

component of a fire detection and fire alarm system which is used for the manual initiation of an alarm [SOURCE: EN 54-1:2011]

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

3.4.1**type A: direct operation**

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

3.4.2**type B: indirect operation**

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

3.5**normal condition**

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

3.6

operating element

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

3.7

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 1 to entry: See Figures 1 and 2, item 2.

3.8

special tool

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 1 to entry: 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.

4 Requirements

4.1 Frangible element

4.1.1 Normal condition

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.

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4.1.2 Alarm condition

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 operating 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)

prEN 54-11:2013 (E)**4.2 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 directly in front of the manual call point, 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.

4.3 Reset facility

It shall only be possible to reset the manual call point after operation by means of a special tool 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.

4.4 Test facility

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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.

4.5 Construction and design**4.5.1 Safety aspects**

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 as amended by EN 894-3:2000/A1:2008.

Corners and edges of the manual call points shall be rounded to reduce the possibility of injury, but the radius of curvature shall not exceed 0,05 a (see Table 1).

4.5.2 Shape, dimensions and colours

4.5.2.1 Shape

The front face of the manual call point shall be approximately square in accordance with Table 1.

The operating face shall either be square (see Figure 1) or rectangular (see Figure 2).

The operating face in accordance with Table 1, Figure 1 and Figure 2:

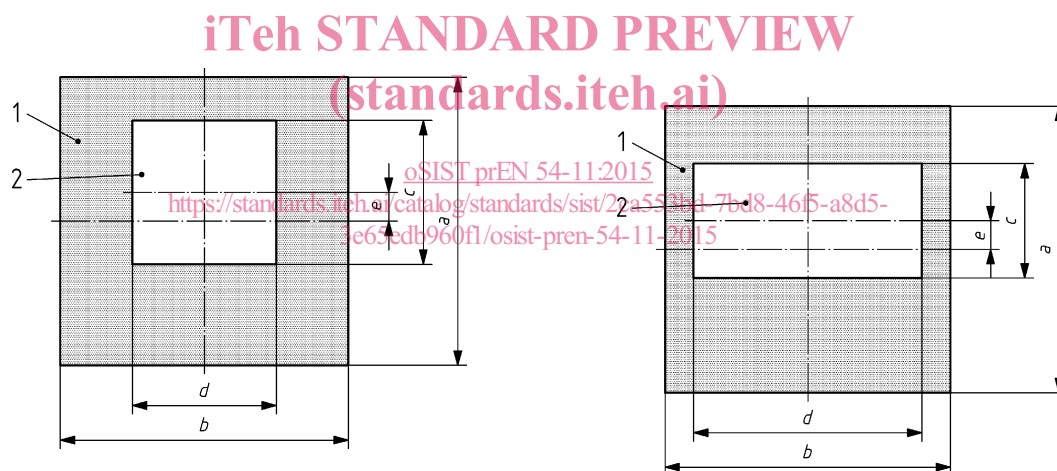
- shall be central about the vertical centre line of the front face and
- may be designed to have a vertical offset about the horizontal centre line of the front face.

The operating face shall be level with or recessed into the front face; it shall not project beyond the front face.

4.5.2.2 Dimensions

The dimensions of the front face and of the operating face shall be within the limits shown in Figure 1, Figure 2 and Table 1. A tolerance of 5 % shall be applied where not otherwise specified.

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.



Key

- 1 front face
- 2 operating face
- a to e see Table 1

Figure 1 — Manual call point with a square operating face

Key

- 1 front face
- 2 operating face
- a to e see Table 1

Figure 2 — Manual call point with a rectangular operating face

Table 1 — Dimensions of manual call points

Dimension	Letter in Figure 1 or Figure 2	Manual call point with	
		square operating face	rectangular operating face
Height of front face	<i>a</i>	$85 \text{ mm} \leq a \leq 135 \text{ mm}$	$85 \text{ mm} \leq a \leq 135 \text{ mm}$
Width of front face	<i>b</i>	$85 \text{ mm} \leq b \leq 135 \text{ mm}$	$85 \text{ mm} \leq b \leq 135 \text{ mm}$
Ratio of width to height of the front face	<i>b/a</i>	$0,95 \leq b/a \leq 1,05$	$0,95 \leq b/a \leq 1,05$
Height of operating face	<i>c</i>	$0,5 a \pm 5 \text{ mm}$	$0,4 a \pm 5 \text{ mm}$
Width of operating face	<i>d</i>	$0,5 a \pm 5 \text{ mm}$	$0,8 a \pm 5 \text{ mm}$
Ratio of width to height of the operating face	<i>d/c</i>	$0,95 \leq d/c \leq 1,05$	$1,9 \leq d/c \leq 2,1$
Maximum vertical offset of the operating face	<i>e</i>	$\pm 0,1 a$	$\pm 0,1 a$

4.5.2.3 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;¹⁵
- 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 3864-1:2011.

4.5.3 Symbols and lettering

4.5.3.1 General

The manual call point shall be marked, with the appropriate symbols shown in Figure 3, as specified in 4.7.3.2 and 4.7.3.3. Examples of the arrangement of symbols on type A and type B manual call points are given in Figures 4 and 5, respectively.

4.5.3.2 Symbols and lettering on the front face

4.5.3.2.1 On the front face above the operating face and central to the vertical centre line shall be the symbol in accordance with Figure 3a. This symbol may be supplemented with the word "FIRE", or equivalent words in the national language. This combination shall be on the front face and above the operating face and central to the vertical centre line. The height of the symbol shall be at least $0,15 a$ and the height of the lettering shall not exceed the height of the symbol. The lettering shall be in accordance with EN ISO 3098-0:1997, "lettering type B, vertical (V)". Symbols and lettering shall be white in accordance with ISO 3864-1:2011.

4.5.3.2.2 Markings other than specified in 4.5.3.2.1 (such as company logo or contact address) shall be restricted to the area of the front face below the horizontal centre line of the operating face. The total area for this marking other than red shall not be greater than 5 % of the area of the front face.

4.5.3.3 Symbols and lettering on the operating face

4.5.3.3.1 The operating face of type A manual call points shall be marked with the symbol in accordance with Figure 3c. The operating face of type B manual call points shall be marked with the symbols in accordance with Figures 3b and 3d. The symbol in accordance with Figure 3b shall point to the operating element and shall remain clearly visible when the frangible element is broken or displaced. These symbols may be supplemented by appropriate words for instruction. Where supplementary wording is used, this shall indicate position and/or operating action (e.g. "PRESS HERE").

These symbols and lettering for any supplementary instructions shall be black with the black area not exceeding 10 % of the area of the operating face.

NOTE A suitable black colour is specified in ISO 3864-1:2011.

The dimensions and spacing of the symbols shall be in proportion to the height shown, see Figure 3.

4.5.3.3.2 Markings other than specified in 4.5.3.3.1 (such as company logo or contact address) shall be restricted to the upper and/or the lower 25 % of the area of the operating face and shall not interfere with the symbols. The total area for this marking other than white shall not be greater than 5 % of the area of the operating face.

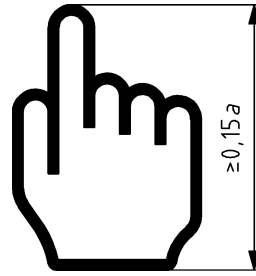
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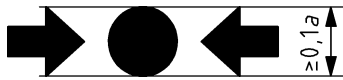
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a) symbol on the front face



b) symbol on the operating face for activating the operating element for type B manual call point



or



or



c) symbol on the operating face for the arrows including the virtual button for type A manual call point

d) symbol on the operating face for the arrows for type B manual call point (The virtual button may also be shown)

NOTE See 4.5.3.3.1 for the proportion of dimensions and spacing of the symbols and the height shown.

Key

a height of the front face, see Table 1

Figure 3 — Symbols used for manual call points

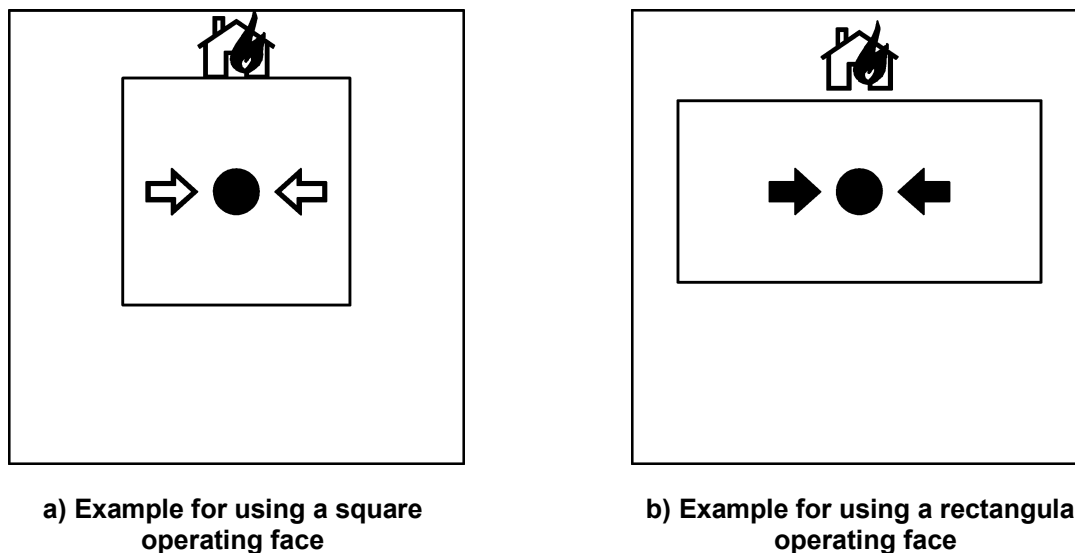
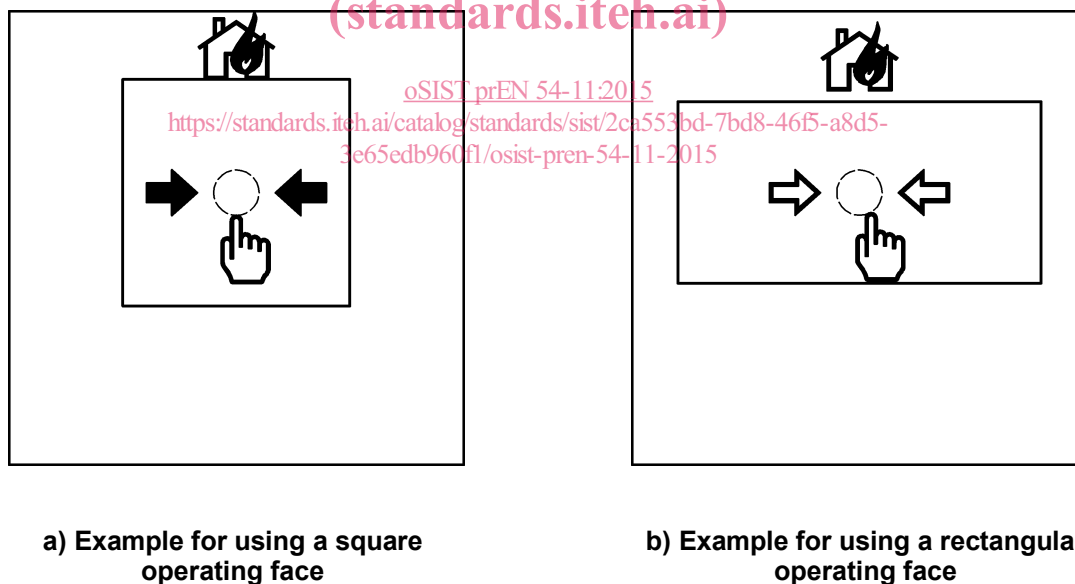


Figure 4 — Example for the front and operating face symbol positions for type A manual call point

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NOTE The dotted outline represents the visible part of the operating element.

Figure 5 — Example for the front and operating face symbol positions for type B manual call point

4.5.4 Protection against accidental operation

In addition to the use of the frangible element other means of protection may be used, e.g. a transparent flap.

Where used, the protection shall be easily and immediately removable and shall have clear instructions for its removal in order to operate the manual call point.

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With the protection in place, the appearance of the manual call point, the instructions for its operation and the state of the manual call point in the normal and alarm condition shall be clearly visible.

4.5.5 Environment category

The environment category (i.e. indoor or outdoor use, special environmental conditions) of the manual call point shall be specified by the manufacturer.

The manual call point shall be tested in accordance with the specified environmental category as given in the test schedule in Table 2.

4.6 Additional requirements for software controlled manual call points**4.6.1 General**

For manual call points which rely on software control in order to fulfil the requirements of this standard, the requirements of 4.8.2, 4.8.3 and 4.8.4 shall be met.

4.6.2 Software documentation

4.6.2.1 Documentation which gives an overview of the software design shall be prepared and submitted for testing, together with the MCP. This documentation shall be in sufficient detail for the design to be inspected for compliance with this standard and shall include at least the following:

- a) a functional description of the main program flow (e.g. as a flow diagram or structogram) including:
- 1) a brief description of the modules and the functions that they perform;
 - 2) the way in which the modules interact;
 - 3) the overall hierarchy of the program;
 - 4) the way in which the software interacts with the hardware of the manual call point;
 - 5) the way in which the modules are called, including any interrupt processing.
- b) a description of which areas of memory are used for the various purposes (e.g. the program, site specific data and running data);
- c) a designation, by which the software and its version can be uniquely identified.

4.6.2.2 The manufacturer shall have available detailed design documentation, which only needs to be provided if required by the testing authority. It shall comprise at least the following:

- a) an overview of the whole system configuration, including all software and hardware components;
- b) a description of each module of the program, containing at least:
 - 1) the name of the module;
 - 2) a description of the tasks performed;
 - 3) a description of the interfaces, including the type of data transfer, the valid data range and the checking for valid data.