

Electrically Controlled Exit Systems

For use on escape routes **BS EN 13637:2015**





dhf Best Practice Guide: Electrically Controlled Exit Systems

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dhf Best Practice Guides

This publication is one in a series of guides addressing the major issues that should be considered when specifying, ordering or using the products it describes. It aims to provide the reader with a concise document which includes a summary of relevant sections from the European product standard. The reader will then be in a position to seek further specialist advice where necessary and recognise GENUINE conformity to the new standard.

NOTE: Unless stated otherwise, references in this document to BS EN 13637 refer to BS EN 13637:2015.

Information in this guide is correct at time of publication and intended for guidance only. Information may since have changed and readers should consult the appropriate standards and authorities to confirm its veracity.

BS EN 13637

Building Hardware – Electrically controlled exit systems for use on escape routes

Contained within this standard is a comprehensive classification system for assessing the wide range of products needed to satisfy the diverse requirements of the European market, including long term durability, fire/smoke resistance, corrosion, temperature and humidity resistance and security from both inside and outside.

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London W4 4AL Tel +44 (0)20 8996 9001
Email: cservices@bsi-global.com

Scope

The standard covers electrically controlled exit systems that are either manufactured and placed on the market in their entirety by one manufacturer or assembled from sub-assemblies produced by more than one manufacturer and subsequently placed on the market as a kit in a single transaction.

These electrically controlled exit systems consist of at least the following elements either separately or combined:

- Initiating element for requesting the release of the electrical locking element (such as horizontal bar, lever handle, push pad, exit button etc.)
- Electrical locking element for securing the door (such as electric lock, electro-magnetic lock, electric release, electrical panic/emergency exit device)
- Electrical controlling element for supplying, connecting and controlling the electrical locking element and initiating element (such as controller and power supply unit)
- Additionally, these electrically controlled exit systems can include a time delay and/or denied exit mode

The standard allows systems with immediate egress giving a safe and effective escape through a doorway, a time delay with a maximum of two operations to release the electrically controlled exit system or a centrally managed denied egress mode whereby remote management of the doors can be achieved. Thus, the standard offers in addition to safety an increase in security to avoid unsafe means of locking the door, for example by additional padlocks and chains.

Within the scope of the standard, delayed exit and denied exit mode is allowed as a means of increasing the security of the building against unauthorised exit and introduces the concept of central management control (CMC).

In addition to the requirements of this European standard, if additional fire characteristics are needed, then these shall be performed to BS EN 1634-1 or BS EN 1634-2.

It is expected that the products to be tested have been EMC tested for low voltage devices to BS EN 61000.

The BS EN 13637:2015 standard covers the complete system including the hardware fitted to the door to provide blocking. It is important that the correct hardware as applied commensurate with the escape risk applicable and that both emergency and panic risks are considered.

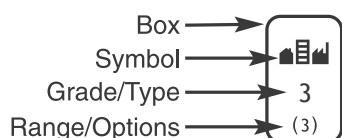
The hardware must be suitable for the application e.g. horizontal panic bar (BS EN 1125) for public areas where users will be untrained & unfamiliar, or where more than 60 persons will use the exit. For areas with trained personnel and with less than 60 persons, then the operating element can be a lever handle or push pad (BS EN 179).

For improved security, the BS EN 13637:2015 standard allows the addition of a secondary locking device. Subject to a maximum of two single operations to release the door, e.g. release button and panic exit bar (in any sequence). Release of the door shall be achieved by either one or two single operations, not requiring any other action e.g. the use of a key, token or any other object.

Classification

This standard has an eleven-digit classification coding. The first five digital align broadly with those on WG4 building hardware standards to enable meaningful comparisons to be made with related products. Digits six to eleven relate to security grade of the product and the last digit gives reference to the type of configuration.

dhf recommends the use of graphic icons to enhance clarity of information and has devised a system to facilitate assimilation of the various product classifications. Each feature within the product classification is represented by an icon comprising four elements; Symbol, Grade/Type, Range/Options and a Box:



The icon above is for a product which meets Grade 3 in the Category of Use classification where BS EN13637 stipulates only grade 3.

Full details on the **dhf** graphic icons system can be found at www.dhfonline.org.uk

Digit 1 Category of use

Only one category is identified.

- Grade 3: high frequency of use by public and others with little incentive to exercise care and with a high chance of misuse, i.e. public areas, commercial buildings etc.

Digit 2 Durability

Four grades are identified; however if the initiating element is not incorporated in the operating element, then the initiating element is tested by additional 6,000 cycles. The grades below are for an operating element only or for an operating element incorporating an initiating element.

- Grade 6: 100,000 cycles
- Grade 7: 200,000 cycles
- Grade 8: 500,000 cycles
- Grade 9: 1,000,000 cycles

Digit 3 Door mass and closing force

Nine grades are identified with maximum figures for the closing force at various door masses as shown across.

Grade	No. Cycles incorporating initiating element	No. Cycles not incorporating initiating element	No. Cycles of an individual initiating element	No. Cycles when a deadbolt is thrown by key
6	100,000	100,000	6,000	25,000
7	200,000	200,000	6,000	50,000
8	500,000	500,000	6,000	125,000
9	1,000,000	1,000,000	6,000	250,000



Digit 4 Suitable for use on fire/smoke doors

Three categories of fire door resistance are identified.

- Grade 0: not verified for use on fire/smoke door assemblies
- Grade A: suitable for use on smoke door assemblies based on test evidence with BS EN 1634-3
- Grade B: suitable for use on smoke / fire door assemblies based on test evidence with BS EN 1634-1 or BS EN 1634-2



Digit 5 Safety

Only one grade of safety is identified.

- Grade 1: all exit systems have a critical safety function, therefore only the top grade is identified



Digit 6 Corrosion, temperature and humidity

Three grades of corrosion resistance are identified with neutral salt-spray to BS EN 1670 and with temperature and humidity resistance requirements as shown.

NOTE: Humidity requirements (level 1 or 2) are shown in brackets.

Grade	EN1670 Salt Spray	Damp heat cyclic resistance	IP Rating
Grade 0 - Indoor Zone	0 hours	No	IP30
Grade 1 - Indoor Zone	24 hours	Yes	IP32
Grade 2 - Outdoor Zone	96 hours	Yes	IP44



Digit 7 Security / Holding Force - Outside

Five grades of security protection are identified for attack from the outside, whereby the respective load is applied against the door and either the electrical locking element

only, electrically lockable operating element (including the locking point) or a combined electrically lockable element and mechanical exit device (BS EN 179/BS EN 1125) solution is used.

- Grade 2: 1,000 N
- Grade 3: 2,000 N
- Grade 4: 3,000 N
- Grade 5: 5,000 N
- Grade 6: above 5,000 N



Digit 8 Security/Holding Force - Inside

Six grades of security are identified for the inside whereby the respective load is applied against the door and either the electrical locking element or electrically lockable operating elements must hold the door secure.

- Grade 1: 500 N
- Grade 2: 1,000 N
- Grade 3: 2,000 N
- Grade 4: 3,000 N
- Grade 5: 5,000 N
- Grade 6: above 5,000 N

NOTE: Recordings for digit 7 may be used to fulfil this requirement due to the fact that the electrical locking element locks the door to the frame and therefore there will be no difference.



Touch bar with electrical latch retraction



Digit 9 Time delay

There are many applications where there is a need to manage the unauthorised use of escape doors for safety or security purposes. For example, to prevent theft from retail stores or babies from maternity wards, to prevent access to restricted areas when there is no emergency or limit egress where the user could come to harm (Dementia care, children's nursery etc.).

Three grades are identified for the time delay:

- Grade 0 - no time delay (ideal for offices, schools, sports recreation centres, hotels etc.)
- Grade 1 - single time delay up to 15 seconds (ideal for retail stores, cinemas, child nurseries, residential homes, mental health wards, banks, security areas etc.)
- Grade 2 - double time delay up to 15 seconds or up to 180 seconds (ideal for airports, seaports, power stations, remote areas etc.)



Signage for system without time delay



Signage for system with time delay



Digit 10 Denied exit mode

Denied exit is available with Grade 2 time delay which can be used in areas restricted due to danger or for safety. (e.g sports arenas, football stadiums, airports and other public venues).

Two exit modes are identified:

- Grade 0 no denied exit
- Grade 1 denied exit available

NOTE: Grade 1 is only available when associated to a Central Management Control (CMC)



Time delay unit with sounder and LEDs

Touch bars with secondary locking



Digit 11 Configuration

Four categories are identified:

Category A - Initiating element being integrated in and activated by a horizontal bar in accordance with BS EN 1125.

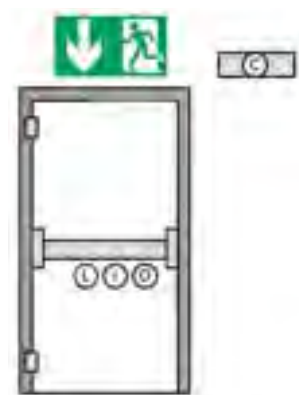
Category B - Initiating element being installed outside the door leaf as part of an exit system which is functionally not linked to an exit device.

Category C - Initiating element being integrated in and activated by a dummy bar or a dummy handle that is not an operating element.

Category D - Other exit system not included in any of the above-mentioned categories.

Examples of configurations

Category A



Touch bar with electrical latch retraction and reader on the outside for access - single action, giving immediate release on the inside.



Touch bar latch with second lock and read-in/read-out - two action release on the inside.



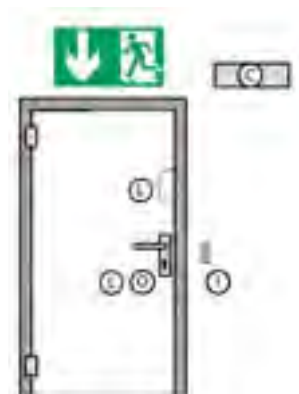
Touch bar latch with second lock and read-in/read-out - two action release with time-delay.



Touch bar latch electro-magnetic lock and read-in/read-out - two action release on inside.

Examples of configurations

Category B



Initiating element outside the door leaf with a second lock controlled by read-in and read-out - two action release on inside.



Illuminated exit button outside the door leaf to release an electro-magnetic lock - single action giving immediate release.

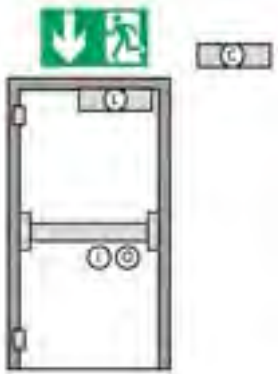


Initiating element outside the door leaf with a second lock controlled by read-in and read-out - two action release on inside with time delay.

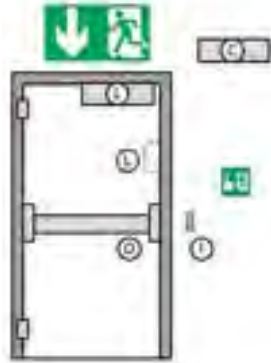
I - Initiating
O - Operating
L - Locking
C - Controller

Examples of configurations

Category C



Dummy touch bar actuator with electro-magnetic lock and read-in on the outside - single action giving immediate release on the inside.



Initiating element outside the door to release a second lock and dummy touch bar to release the electro-magnetic lock - two action release on inside.



Initiating element outside the door leaf to release a second lock and dummy touch bar to release the electro-magnetic lock - two action release with time delay on inside.

Examples of configurations

Category D



Initiating element on the door leaf with a time delay.



Initiating element on the door with the operating element on the door and with time delay.

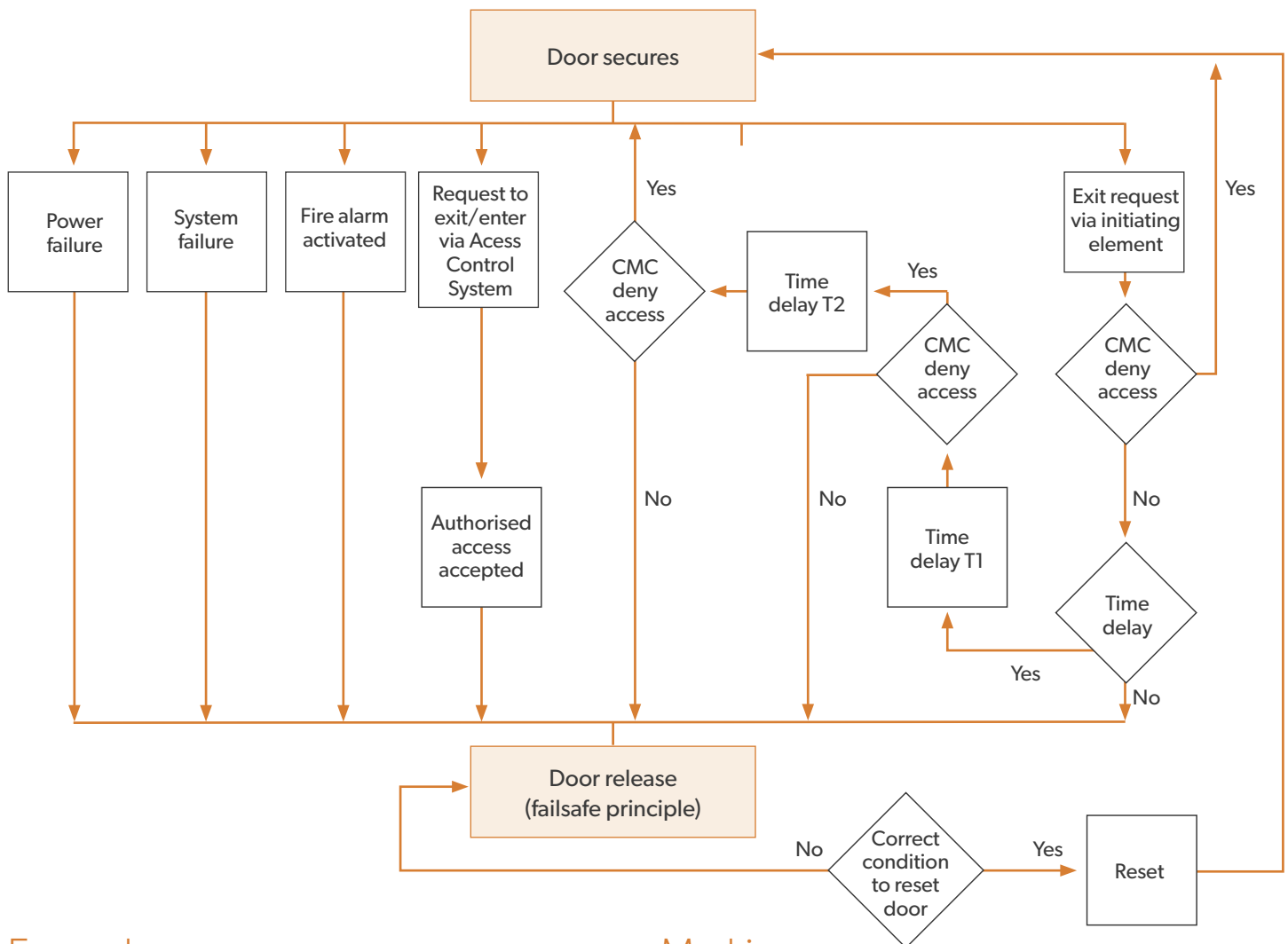


Initiating element and time delay fitted adjacent to door



Secondary locking shown above mortice escape lock

Operation of a CMC (Controlled Management System)



Example

The following marking denotes hardware suitable for use where high frequency of use by the public with little incentive to exercise care with a chance of misuse; that will withstand a durability of 200,000 cycles of the initiating element which is also the operating element; up to 200kg in mass with a closing force of less than 25N; that is suitable for use on a fire/smoke resisting doors; that has 96 hours salt spray corrosion resistance; that can withstand 3,000N load on the inside and outside of the door; has no time delay; that has no denied access; that has the initiating element integrated in and activate by a horizontal bar in accordance with BS EN 1125.



Marking

On the product:

The following information shall be quoted on the product or in the label, packaging or literature.

- (a) Manufacturer's name or trademark or other means of positive identification.
- (b) Dated reference to the standard i.e. BS EN 13673:2015
- (c) Month and year of manufacture

Only (a) shall need to be accessible after installation, item (c) may be in a coded form

On the packaging:

- (a) Manufacturer's name or trademark or other means of positive identification
- (b) Manufacture's product reference

UKCA / CE Marking

The standard has an Annex ZA, but the ratification by the Commission to allow entry into the official journal for UKCA / CE marking to start is currently under review.

Products can claim full compliance with EN 13637 today as a voluntary standard but not UKCA/CE marked and would provide a fully performance-tested best practice solution, satisfying the requirements of App Doc 7 to prove the solution is fit for purpose and designed for the application of electrically controlling an escape route door.

Conformity

Conformity to the standard must be clearly and unequivocally stated. Such phrases as “tested to ...”, “designed to conform to ...”, “approved to .. .”, are not sufficient. To avoid misleading or confusing claims it is recommended that one of the following phrases is used when stating conformity:

- a) This product has been successfully type-tested for conformity to all of the requirements of BS EN13637:2015. Test reports and/or certificates are available upon request
- b) This product has been successfully type-tested for conformity to all of the requirements of BS EN 13637:2015 including the additional requirements for fire/smoke door use*. Test reports and/or certificates are available upon request

*Add as appropriate.

- c) This product has been successfully type-tested for conformity to all of the requirements of BS EN13637:2015 including the additional requirements for fire/smoke door use*. Regular audit testing is undertaken. Test reports and/or certificates are available upon request

Quality Assurance

A recognised standard for quality assurance, EN ISO 9001:2000 or similar provides confidence that the products are being manufactured to a consistent quality level.

Companies displaying this symbol are registered under the BSI Registered Firm Scheme.



Related Standards

Other European standards related to BS EN14846 are:

BS EN 179 Building Hardware - Emergency exit devices operated by a lever or push pad for use on escape routes

BS EN 1125 Building Hardware - Panic exit devices operated by a horizontal bar for use on escape routes

BS EN 1634-1 Fire resistance tests for door and shutter assemblies – Part 1: Fire doors and shutters

BS EN 1634-2 Fire resistance tests for door and shutter assemblies – Part 2: Fire resistance characterisation test for elements of building hardware

BS EN 1634-3 Fire resistance tests for door and shutter assemblies – Part 3: Smoke control test for door and shutter assemblies

BS EN 1670 Building hardware – Corrosion resistance – Requirements and test methods

BS EN 55022 - Information technology equipment - Radio disturbance characteristics

BS EN 60529 - Degrees of protection provided by enclosures (IP Code)

BS EN 61000-3-2 Electromagnetic compatibility (EMC) - Part 3-2: Limits for harmonic current emissions

BS EN 61000-3-3 Electromagnetic compatibility (EMC) - Part 3-2: Limitation of voltage changes, voltage fluctuations and flicker in public low-voltage supply system, for systems with rated current

BS EN 61000-4-2 Electromagnetic compatibility (EMC) – Part 4-2: Testing and measurement techniques – Electrostatic discharge immunity test

BS EN 61000-4-11 Electromagnetic compatibility (EMC) – Part 4-11: Testing and measurement techniques – Voltage dips, short interruptions and voltage variations immunity test

BS EN 61000-6-2 Electromagnetic compatibility (EMC) – Part 6-2: Generic standards - Immunity for industrial environments

BS EN 61000-6-3 Electromagnetic compatibility (EMC) – Part 6-3: Generic standards - Emission standard for residential, commercial and light-industrial environments

BS EN 60068-2-1:2007 Environmental testing - Part 2-1 Test A Cold

BS EN 60068-2-2:2007 Environmental testing - Part 2-2 Test B Dry Heat

BS EN 60068-2-30:2005 Environmental testing - Part 2-30 Test Db Damp Heat

BS EN 60947-5-5 Low-voltage switchgear and control gear - Part 5-5 Control circuit devices and switching elements

BS EN 61508-1 Functional safety of electrical/electronic/programmable electronic safety-related system

BS EN ISO 7010:2012 Graphical symbols - Safety colours and safety signs

IEC 60050-845 International Electro-technical Vocabulary - Lighting

EN 60529:1991 (IP code)

Support Service

The correct installation of electrically controlled exit systems for use on escape routes is essential to ensure that they are able to operate efficiently within the performance levels described in this European Standard.

Specialist advice is available from the **dhf** members in support of their products from specification stages through supply to effective operation on site.

dhf Profile

dhf (Door & Hardware Federation) has the ultimate aim of maintaining and raising quality standards throughout the industry sectors it represents:

- Locks and building hardware
- Metal and timber doorsets
- Industrial/commercial doors and shutters
- Domestic garage doors
- Automated gates

dhf provides its members with all the guidance, advice, and training necessary to meet minimum standards of legal compliance and safety.





Contact us for more information



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