

# INTERNATIONAL STANDARD

# NORME INTERNATIONALE

**Automatic electrical controls –  
Part 2-12: Particular requirements for electrically operated door locks**

**Dispositifs de commande électrique automatiques –  
Partie 2-12: Exigences particulières pour les serrures électriques de portes**

IEC 60730-2-12:2015

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**AUTOMATIC ELECTRICAL CONTROLS –****Part 2-12: Particular requirements for  
electrically operated door locks**

## FOREWORD

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International Standard IEC 60730-2-12 has been prepared by technical committee 72: Automatic electrical controls.

This third edition cancels and replaces the second edition published in 2005. This edition constitutes a technical revision. This edition includes the following significant technical changes with respect to the previous edition:

- a) aligns the text with IEC 60730-1, Edition 5;
- b) modifies requirements for Class B control function (H.27.1.2.2);
- c) modifies requirements for Class C control function (H.27.1.2.3);
- d) modifies requirements for faults during safety shut-down.

The text of this standard is based on the following documents:

FDIS	Report on voting
72/981/FDIS	72/993/RVD

Full information on the voting for the approval of this standard can be found in the report on voting indicated in the above table.

This publication has been drafted in accordance with the ISO/IEC Directives, Part 2.

This part 2 is intended to be used in conjunction with IEC 60730-1. It was established on the basis of the fifth edition (2013) of that publication. Consideration may be given to future editions of, or amendments to, IEC 60730-1.

This part 2 supplements or modifies the corresponding clauses in IEC 60730-1 so as to convert that publication into the IEC standard: Particular requirements for electrically operated door locks.

Where this part 2 states "addition", "modification", or "replacement", the relevant requirement, test specification or explanatory matter in part 1 should be adapted accordingly.

Where no change is necessary, this part 2 indicates that the relevant clause or subclause applies.

In the development of a fully international standard, it has been necessary to take into consideration the differing requirements resulting from practical experience in various parts of the world and to recognize the variation in national electrical systems and wiring rules.

The "in some countries" notes regarding differing national practices are contained in the following subclauses:

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17.1.3.1

17.7.1

17.7.7

17.10.4

27.2.3.1

In this publication:

1) The following print types are used:

- Requirements proper: in roman type;
- *Test specifications: in italic type;*
- Notes; in small roman type;
- Words defined in Clause 2: **bold**.

2) Subclauses, notes, tables and figures which are additional to those in part 1 are numbered starting from 101; additional annexes are lettered AA, BB, etc.

A list of all parts of the IEC 60730 series, published under the title *Automatic electrical controls* can be found on the IEC website.

The committee has decided that the contents of this publication will remain unchanged until the stability date indicated on the IEC website under "<http://webstore.iec.ch>" in the data related to the specific publication. At this date, the publication will be

- reconfirmed,
- withdrawn,
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## AUTOMATIC ELECTRICAL CONTROLS –

### Part 2-12: Particular requirements for electrically operated door locks

#### 1 Scope and normative references

This clause of Part 1 is applicable except as follows:

##### 1.1 Scope

###### *Replacement:*

This part of IEC 60730 applies to **electrically operated door locks** for use in, on or in association with equipment, including equipment for heating, air-conditioning and similar applications. The equipment may use electricity, gas, oil, solid fuel, solar thermal energy, etc., or a combination thereof.

NOTE 1 Throughout this standard, the word "equipment" includes "appliance" and "control system".

This standard also applies to **electrically operated door locks** for equipment that may be used by the public, such as equipment intended to be used in shops, offices, hospitals, farms and commercial and industrial applications.

This standard does not apply to **electrically operated door locks** intended exclusively for industrial process applications unless explicitly mentioned in the equipment standard.

This standard does not apply to **electrically operated door locks** intended for security access applications.

NOTE 2 Standards that cover these applications are under IEC Technical Committee 79.

###### 1.1.1 *Replacement:*

This standard applies to the inherent safety, to the **operating values, operating sequences** where such are associated with equipment protection, and to the testing of door locks used in, or in association with equipment.

This standard is also applicable to door locks for appliances within the scope of IEC 60335-1.

NOTE Throughout this standard, the word "door" means "door, cover or lid". The words "door lock" mean "electrically operated door lock".

This standard is also applicable to individual door locks utilized as part of a **control system** or door locks which are mechanically integral with multi-functional **controls** having non-electrical outputs or employing motors.

Door locks for equipment not intended for normal household use, but which nevertheless may be used by the public, such as equipment intended to be used by laymen in shops, in light industry and on farms, are within the scope of this standard.

This standard is also applicable to the **functional safety of low complexity safety related systems and controls** employing door locks as the actuating element.



### 1.1.2 Replacement:

This standard applies to door locks with electrical circuits and **control** circuits which are, for example, operated by bimetals, magnet coils, memory metals, pressure elements, temperature-sensitive expansion elements or electronic elements.

### 1.1.3 Not applicable.

### 1.1.4 Replacement:

This standard applies to **manual controls** when such are electrically and/or mechanically integral with door locks.

NOTE Requirements for manual switches not forming part of a door lock are contained in IEC 61058-1.

### 1.1.5 Replacement:

This standard applies to a.c. or d.c. powered door locks with a rated voltage not exceeding 690 V a.c. or 600 V d.c.

### 1.1.6 Replacement:

This standard does not take into account the **response value** of an **automatic action** of a door lock, if such a **response value** is dependent upon the method of mounting the **control** in the equipment. Where a **response value** is of significant purpose for the protection of the **user**, or surroundings, the value defined in the appropriate equipment standard or as determined by the manufacturer shall apply.

### 1.1.7 Replacement:

This standard applies also to door locks incorporating **electronic devices**, requirements for which are contained in Annex H and door locks using **thermistors**, requirements for which are contained in Annex J.

## 2 Terms and definitions

This clause of Part 1 is applicable except as follows:

### 2.2 Definitions of types of control according to purpose

*Additional definition:*

#### 2.2.101

##### **electrically operated door lock**

incorporated or integrated **electrically operated mechanism** intended to control the door **locking** in equipment by means of a mechanical output mechanism which physically secures a door, **cover** or lid

### 2.3 Definitions relating to the function of controls

*Additional definitions:*

#### 2.3.101

##### **drop-out value**

**operating value** at which the **locking** means is disengaged

**2.3.102**

**locking**

mechanical action intended to block a door mechanism in such a way that opening of the door is prevented under defined conditions

**2.3.103**

**locking delay**

period of time elapsing between the signal to lock and completion of the **locking** action

**2.3.104**

**locking force**

minimum mechanical force intended for the door lock to prevent opening of the door

**2.3.105**

**locking security**

condition in which the door lock either prevents an appliance door from being opened or prevents the appliance from being operated, even if the door lock is damaged

**2.3.106**

**unlocking delay**

period of time elapsing between the signal to unlock and completion of the unlocking action

**3 General requirements**

This clause of Part 1 is applicable.

**4 General notes on tests**

This clause of Part 1 is applicable except as follows:

**4.1 Conditions of test**

**4.1.1 Addition:**

NOTE 101 An actual door or a suitable device simulating the door may be used for the tests of this standard.

**5 Rating**

This clause of Part 1 is applicable.

**6 Classification**

This clause of Part 1 is applicable except as follows:

**6.3 According to their purpose**

*Additional subclauses:*

**6.3.101** – door locks;

**6.3.101.1** – voltage sensing;

NOTE The design may include a voltage-sensitive heating element, a magnet coil or an electronic element.

**6.3.101.2** – current sensing;

NOTE The design may include a current-sensitive heating element, a magnet coil or an electronic element.

### 6.3.101.3 – thermally operated;

NOTE **Locking** may be controlled either directly or indirectly by a temperature-sensitive element.

### 6.3.101.4 – pressure operated.

NOTE Latching may either be directly or indirectly controlled by pressure-sensitive elements.

## 6.4 According to features of automatic action

*Additional subclause:*

### 6.4.101 – locking security (Type 1.AA or 2.AA).

## 7 Information

This clause of Part 1 is applicable except as follows:

### 7.2 Methods of providing information

**Table 1 (7.2 of edition 3) – Required information and methods of providing information**

*Addition:*

	Information	Clause or subclause	Method
101	<b>Locking delay</b> <sup>101</sup>	2.3.103	X
102	<b>Unlocking delay</b> <sup>101</sup>	2.3.106	X
103	<b>Locking force</b> (if declared) <sup>101</sup>	2.3.104 18.101.1	X
104	<b>Drop-out value</b>	2.3.101	X
105	Effects on controlled outputs (if declared) <sup>102</sup>	6.4.101 18.101.2	X
106	Method of <b>operation</b> for the test of Clause 17	17	X

*Addition to Note i:*

For door locks, limits of **activating quantity** are specified either in the applicable appliance standard, by the appliance manufacturer or as declared by the door lock manufacturer (see 17.7 and 17.8).

*Additional notes:*

<sup>101</sup> These are specified either in the applicable appliance standard, by the appliance manufacturer or by the door lock manufacturer.

<sup>102</sup> This provides for manufacturer declaration of the outputs which will result after **failure** of the door lock.

## 8 Protection against electric shock

This clause of Part 1 is applicable.

## 9 Provision for protective earthing

This clause of Part 1 is applicable.

## 10 Terminals and terminations

This clause of Part 1 is applicable.

## 11 Constructional requirements

This clause of Part 1 is applicable.

## 12 Moisture and dust resistance

This clause of Part 1 is applicable.

## 13 Electric strength and insulation resistance

This clause of Part 1 is applicable.

## 14 Heating

This clause of Part 1 is applicable.

## 15 Manufacturing deviation and drift

This clause of Part 1 is applicable.

## 16 Environmental stress

This clause of Part 1 is applicable. [IEC 60730-2-12:2015](https://standards.iteh.ai/catalog/standards/sist/9083064a-10b4-4fa3-8a25-0a8ebca3182d/iec-60730-2-12-2015)

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## 17 Endurance

This clause of Part 1 is applicable except as follows:

### 17.1.3 Test sequence and conditions

*Replacement:*

**17.1.3.1** *In general, the sequence of tests is:*

- *an ageing test specified in 17.6 (this test applies only to those actions classified as Type 1.M or 2.M);*
- *an over-voltage test of **automatic action** at accelerated rate specified in 17.7 (in Canada and the USA this test is replaced by the overload test);*
- *a test of **automatic action** at acceleration rate specified in 17.8;*
- *an over-voltage test of **manual action** at accelerated speed specified in 17.10 (in Canada and the USA, this test is replaced by an overload test);*
- *a test of **manual action** as specified in 17.11.*

### 17.3 Thermal conditions for the tests

*Replacement:*

**17.3.1** *The following thermal conditions apply to door locks:*

- *those parts which are accessible when the door lock is mounted in a declared manner shall be exposed to normal room temperature;*
- *the mounting surface of the door lock shall be maintained between  $T_{s \max}$  and  $T_{s \max} + 5$  °C, or 1,05 times  $T_{s \max}$ , whichever is greater;*
- *if the **control** does not cycle with a mounting surface temperature of  $T_{s \max}$ , then the test is conducted at  $(20 \pm 5)$  °C.*

**17.3.2** Not applicable.

### 17.4 Manual and mechanical conditions for the tests

**17.4.1** *Replacement:*

*Manual **actuation** shall simulate **operation** of the door. Each operating cycle shall consist of one closing and opening action of the door.*

**17.4.2** *Replacement:*

*The speed of movement of the simulated door latch for the test shall be:*

- *(9 to 45) °/s for rotary actions;*
- *(5 to 25) mm/s for linear actions.*

**17.4.3 to 17.4.5** Not applicable.

### 17.7 **Overvoltage (or overload test in Canada, the USA, and all countries using an overload test) of automatic action at accelerated rate**

*Replace the existing title with the following new title:*

### **17.7 Overvoltage (or, in Canada and the USA, overload) test of automatic action at accelerated rate**

**17.7.1** *Replacement:*

*The electrical conditions for automatically operated circuits, with the exception of the lock **control** circuit of current sensing door locks, shall be those specified for overvoltage (or, in Canada, China and the USA, overload) in 17.2.*

*The current for the **control** circuit of current sensitive door locks shall be that declared in Table 1.*

**17.7.3** *Replacement:*

*The method of **operation** and the **operating sequence** shall be as declared by the manufacturer.*

**17.7.7** *Replacement:*

*During the test, the **locking** means of the door lock shall be in its operating position.*

NOTE In Canada and the USA, the number of cycles is 50.

### 17.8 Test of automatic action at accelerated rate

*Replacement:*

**17.8.1** *The electrical conditions for all automatically operated circuits, with the exception of the lock **control** circuit of current sensing door locks, shall be those specified in 17.2. The current for the **control** circuit of current sensing door locks shall be that specified in 17.2.*

**17.8.2** *The thermal conditions shall be those specified in 17.3.*

**17.8.3** *The method of **operation** and the **operating sequence** shall be as declared by the manufacturer.*

**17.8.4** *The number of automatic cycles for the test is that declared in Table 1, requirement 27, less the number of cycles specified in 17.7.*

### 17.9 Test of automatic action at slow rate

Not applicable.

### 17.10 Overvoltage (or overload test in Canada USA and 17.10 all countries that use the overload test) of manual action at accelerated speed

**17.10.3** *Replacement:*

*The method of **operation** and the **operating sequence** shall be as declared by the manufacturer.*

**17.10.4** *Replacement:*

*The number of manual cycles is either 10 % of the number declared in Table 1 or 100 cycles, whichever is the smaller.*

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NOTE In Canada and the USA, the number of cycles is 50.

### 17.11 Test of manual action at slow speed

*Replacement:*

**17.11.1** *The electrical conditions for manually operated circuits shall be those specified in 17.2.*

**17.11.2** *The thermal conditions shall be those specified in 17.3.*

**17.11.3** *The method of **operation** and the **operating sequence** shall be as declared by the manufacturer.*

**17.11.4** *The number of manual cycles is that declared in Table 1, requirement 26, less the number of cycles specified in 17.10.*

### 17.12 Test of manual action at high speed

Not applicable.

### 17.13 Test of manual action at accelerated speed

Not applicable.