

# INTERNATIONAL STANDARD



**Switches for household and similar fixed electrical installations –  
Part 2-3: Particular requirements – Time-delay switches (TDS)**

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IEC 60669-2-3

Edition 4.0 2024-03  
REDLINE VERSION

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INTERNATIONAL  
ELECTROTECHNICAL  
COMMISSION

ICS 29.120.40

ISBN 978-2-8322-8531-2

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## INTERNATIONAL ELECTROTECHNICAL COMMISSION

**SWITCHES FOR HOUSEHOLD AND SIMILAR FIXED  
ELECTRICAL INSTALLATIONS –****Part 2-3: Particular requirements –  
Time-delay switches (TDS)**

## FOREWORD

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IEC 60669-2-3 has been prepared by subcommittee 23B: Plugs, socket-outlets and switches, of IEC technical committee 23: Electrical accessories. It is an International Standard.

This fourth edition cancels and replaces the third edition published in 2006. This edition constitutes a technical revision.

This edition includes the following significant technical changes with respect to the previous edition:

- a) Revision of the present edition with reference to IEC 60669-1:2017 (Edition 4);
- b) Introduction of a revision to Annex E "Additional requirements and tests for switches intended to be used at a temperature lower than  $-5\text{ °C}$ ".

The text of this International Standard is based on the following documents:

Draft	Report on voting
23B/1487/FDIS	23B/1501/RVD

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

The language used for the development of this International Standard is English.

This document was drafted in accordance with ISO/IEC Directives, Part 2, and developed in accordance with ISO/IEC Directives, Part 1 and ISO/IEC Directives, IEC Supplement, available at [www.iec.ch/members\\_experts/refdocs](http://www.iec.ch/members_experts/refdocs). The main document types developed by IEC are described in greater detail at [www.iec.ch/publications](http://www.iec.ch/publications).

This part of IEC 60669-2 is to be used in conjunction with IEC 60669-1:2017. It lists the changes necessary to convert that standard into a specific standard for time-delay switches.

When a particular subclause of IEC 60669-1:2017 is not mentioned in this document, that subclause applies as far as reasonable.

In this document, the following print types are used:

- requirements proper: in roman type;
- *test specifications: in italic type;*
- notes: in smaller roman type.

Subclauses, figures or tables which are additional to those in IEC 60669-1:2017 are numbered starting from 101.

A list of all parts of IEC 60669 series, under the general title *Switches for household and similar fixed electrical installations*, can be found on the IEC website.

The committee has decided that the contents of this document will remain unchanged until the stability date indicated on the IEC website under [webstore.iec.ch](https://webstore.iec.ch) in the data related to the specific document. At this date, the document will be

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# SWITCHES FOR HOUSEHOLD AND SIMILAR FIXED ELECTRICAL INSTALLATIONS –

## Part 2-3: Particular requirements – Time-delay switches (TDS)

### 1 Scope

IEC 60669-1:2017, Clause 1 is applicable except as follows:

*Replacement of the first paragraph with the following:*

This part of IEC 60669 applies to time-delay switches (hereinafter referred to as TDS) with a rated voltage not exceeding 440 V AC and a rated current not exceeding 63 A, intended for household and similar fixed electrical installations, either indoors or outdoors, operated by hand and/or by remote control. For the control circuit, the rated control voltage does not exceed 440 V AC or 220 V DC.

TDS are provided with a time-delay device operated by mechanical, thermal, pneumatic, hydraulic or electrical means or by a combination of them.

Electronic TDS are within the scope of IEC 60669-2-1 but not of this document.

TDS including only passive components such as resistors, capacitors, positive temperature coefficient (PTC) and negative temperature coefficient (NTC) components and printed-wiring circuit boards are not considered to be electronic TDS.

### 2 Normative references

IEC 60669-1:2017, Clause 2 is applicable with the following additions:

IEC 60317 (all parts), *Specifications for particular types of winding wires*

IEC 60445:1999/2021, *Basic and safety principles for man-machine interface, marking and identification – Identification of equipment terminals and of terminations of certain designated conductors, including general rules for an alphanumeric system, conductor terminations and conductors*

IEC 60664-1:2020, *Insulation coordination for equipment within low-voltage supply systems – Part 1: Principles, requirements and tests*

IEC 60664-3:2016, *Insulation coordination for equipment within low-voltage systems – Part 3: Use of coating, potting or moulding for protection against pollution*

IEC 60669-1:2017, *Switches for household and similar fixed electrical installations – Part 1: General requirements*

~~IEC 60669-2-1:2002, Switches for household and similar fixed electrical installations – Part 2-1: Particular requirements – Electronic switches~~

~~IEC 61140, Protection against electric shock – Common aspects for installation and equipment~~



~~IEC 61558-2-6:1997, Safety of power transformers, power supply units and similar – Part 2-6: Particular requirements for safety isolating transformers for general use~~

IEC 61558-2-6:2021, *Safety of transformers, reactors, power supply units and combinations thereof – Part 2-6: Particular requirements and tests for safety isolating transformers and power supply units incorporating safety isolating transformers for general applications*

### 3 Terms and definitions

IEC 60669-1:2017, Clause 3 is applicable with the following ~~additions~~ modifications:

#### 3.148

##### **thread-cutting screw**

*Addition of the following note:*

Note 101 to entry: This definition is ~~only~~ applicable to the switching circuit only.

#### 3.159

##### **mechanical time-delay device**

*Addition of the following note:*

Note 101 to entry: This definition is ~~only~~ applicable to the switching circuit only.

*Addition of the following new ~~definitions~~ terminological entries:*

#### 3.101

##### **time-delay switch**

##### **TDS**

switch provided with a time-delay device which operates for a certain time (the delay time)

Note 101 to entry: Time-delay switches may be either manually actuated and/or remotely electrically initiated.

#### 3.101.1

##### **electronic TDS**

TDS containing electronic component(s)

#### 3.102

##### **rated control voltage**

voltage assigned to the control circuit by the manufacturer

#### 3.103

##### **switching circuit**

circuit which contains the parts which allow the rated current to flow through the TDS

#### 3.104

##### **control circuit**

circuit which includes electrical parts to control the switching circuit in an electrically controlled TDS

#### 3.105

##### **control mechanism**

all parts which are intended for the operation of the TDS

#### 3.106

##### **incorporated hand-operated device**

device ~~incorporated in the switch~~ which allows the switching circuit to be operated, directly or indirectly

Note 101 to entry: An incorporated hand-operated device is not intended for the normal operation of the TDS.

**3.107  
delay time**

period during which the switching circuit(s) is (are) kept closed

Note 101 to entry: Any time taken for the decreasing of the voltage (e.g. to reduce the light) at the end of the delay period is included within the delay time.

**3.108  
delay device**

all components which have an influence on the delay time

Note 101 to entry: The delay device is energized by means of an impulse into the control circuit in an electrically controlled TDS.

Note 102 to entry: The delay time may be adjustable.

**3.109  
disconnectable TDS**

TDS consisting of two parts, the first being used as a base and including the terminals, the other being removable and including the switching and the control circuits, the two parts being resiliently connected together using a means which allows joining and/or separating with or without the use of a tool

**4 General requirements**

IEC 60669-1:2017, Clause 4 is applicable with the following addition:

*Addition of the following after the first paragraph:*

The operation of a TDS shall not be impaired when it is mounted at an angle deviating by not more than 5° from the specified position of use.

**5 General notes remarks on tests**

IEC 60669-1:2017, Clause 5 is applicable with the following additions:

~~5.4—Addition after the last paragraph:~~

~~For the tests of subclause 101, three additional specimens are necessary.~~

*Addition to Table 1:*

**Table 1 – Number of specimens needed for the tests**

Clauses and subclauses	Number of specimens	Number of additional specimens for dual current rating
101 Abnormal operation of the control circuit	PQR	

*Addition of the following subclauses:*

### 5.101 Incorporated hand-operated device

If a TDS is provided with an incorporated hand-operated device, actuating the switching circuit directly, it shall be tested as specified in 19.101.

### 5.102 Operated by hand

For a TDS operated by hand, the requirements relating to the control voltage do not apply.

### 5.103 Control and switching circuits without common point

In the case of a TDS for which the control and the switching circuits have no common point, the test is made with the circuits supplied with the rated voltages which are specified in this document.

## 6 Ratings

IEC 60669-1:2017, Clause 6 is applicable except as follows:

### 6.1 Rated voltage

Replacement of the first paragraph with the following:

Preferred values of rated voltage are:

- AC: 6 V, 8 V, 9 V, 12 V, 24 V, 42 V, 48 V, 110 V, 130 V, 220 V, 230 V and 240 V;

NOTE These rated voltages are aligned with the rated control voltages specified in 6.101 to simplify the tests on TDS having a common point between the control and switching circuits.

### ~~6.2 Addition of the following note:~~

~~NOTE In certain TDS, auxiliary contacts designed for a current lower than the rated current of the switching circuit may be added. Relevant ratings and requirements are under consideration.~~

Addition of the following subclause:

### 6.101 Rated control voltage

Preferred values of rated control voltage are:

- AC: 6 V, 8 V, 9 V, 12 V, 24 V, 42 V, 48 V, 110 V, 130 V, 220 V, 230 V and 240 V;
- DC: 6V, 9 V, 12 V, 24 V, 48 V, 60 V, 110 V and 220 V.

## 7 Classification

IEC 60669-1:2017, Clause 7 is applicable except as follows:

### 7.1-1 Replacement:

According to the possible connections (see Figure 8 of IEC 60669-1:2017):

Replace the existing nine-dash list with the following:

Pattern number

- single-pole switches..... 1
- double-pole switches ..... 2
- three-pole switches ..... 3
- three-pole plus switched neutral switches ..... 03
- two-way switches ..... 6

**7.4.5** according to the method of actuating a switch:

*Addition of the following:*

- time-delay switches (TDS):
  - manually operated;
  - remotely operated;
  - manually and remotely operated.

NOTE The above methods of operation ~~may~~ can be combined with a complementary method of operation allowing permanent ON and/or permanent OFF. These possibilities are given by a complementary device acting either directly on the switching circuit, or on the control circuit.

**7.4.7** according to the method of installation, as a consequence of the design of the switch

*Addition of the following:*

- disconnectable TDS;

*Addition of the following subclause:*

**7.4.101** according to the type of control mechanism:

- mechanical;
- thermal;
- pneumatic;
- hydraulic;
- electrical;
- combination(s) of the above.

## 8 Marking

IEC 60669-1:2017, Clause 8 is applicable with the following additions:

### 8.1 General

*Addition after the last dashed text:*

- ~~— rated control voltage in volts, if different from the rated voltage;~~
- ~~— symbol for the adjustment of the delay time, if applicable;~~
- ~~— symbols for the positions "Permanent on" and "Permanent off", if applicable;~~
- ~~— symbol for "Delay time".~~

*Replacement of list item b) with the following:*

b) rated voltage(s) in volts and rated control voltage(s) in volts, if different from the rated voltage(s);

*Addition of the following after list item m):*

Switches shall be also marked with

- n) symbol for the adjustment of the delay time, if applicable;
- o) symbols for the positions "Permanent ON" and "Permanent OFF", if applicable;
- p) symbol for "Delay time".

*Addition after Note 25:*

NOTE 3 101 If a delay time value is indicated, it **should** can be expressed in seconds, minutes and hours.

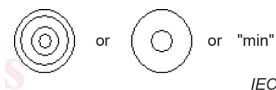
**8.2 Addition of the following symbols:**

Permanent ON

**NOTE** – If the TDS may also be remote controlled, the symbol | is not to be used.



Delay time



Permanent OFF but only if the air gap of the switching contact of the TDS is not less than 3 mm



Adjustment of delay time

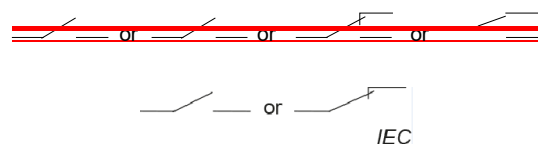
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Control mechanism



Switch



NOTE 101 In **UK** the following country, the symbol consisting of 2 concentric circles is not used to indicate time delay: UK.

**8.3 Visibility of markings**

*Replace the second paragraph with the following:*

Markings as given in 8.1 a), b), c), d), e) and, if applicable, f), g), h), k), l), n), o) and p) shall be placed on the main part of the TDS.

**8.4 Marking on terminals for phase conductors**

*Addition of the following after the fourth paragraph and before the notes of this Subclause 8.4:*

If necessary, the wiring diagram on which the terminal reference is clearly indicated shall be fixed to the accessory or put inside the protective cover for the terminals.

The terminals of the control circuit shall be marked according to either IEC 60445 ~~and/or~~ with the symbols according to 8.2, or both.

~~8.7 This subclause of part 1 does not apply.~~

## 9 Checking of dimensions

IEC 60669-1:2017, Clause 9 is applicable.

## 10 Protection against electric shock

IEC 60669-1:2017, Clause 10 is applicable.

## 11 Provision for earthing

IEC 60669-1:2017, Clause 11 is applicable.

## 12 Terminals

IEC 60669-1:2017, Clause 12 is applicable.

## 13 Constructional requirements

IEC 60669-1:2017, Clause 13 is applicable with the following ~~additions~~ modifications:

*Addition of the following subclauses:*

### 13.101 Reset function

All TDS shall be resettable; this means TDS revert to the full-time delay when the operating means is actuated during a previously started time delay.

### 13.102 Transformers intended for SELV circuits

Transformers intended for SELV circuits shall be of the safety isolating type and shall comply with the relevant requirements of IEC 61558-2-6.

NOTE 101 For the use of SELV ~~and PELV~~, see IEC 61140 and IEC 60364-4-41.\*

## 14 Mechanism

IEC 60669-1:2017, Clause 14 is applicable with the following ~~addition~~ modifications:

*Addition of the following subclause:*

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\* IEC 60364-4-41:1992, *Electrical installations of buildings — Part 4: Protection for safety — Chapter 41: Protection against electric shock*