

INTERNATIONAL STANDARD

Automatic electrical controls –
Part 2-7: Particular requirements for timers and time switches
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INTERNATIONAL
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INTERNATIONAL ELECTROTECHNICAL COMMISSION

AUTOMATIC ELECTRICAL CONTROLS –**Part 2-7: Particular requirements
for timers and time switches**

FOREWORD

- 1) The International Electrotechnical Commission (IEC) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of IEC is to promote international co-operation on all questions concerning standardization in the electrical and electronic fields. To this end and in addition to other activities, IEC publishes International Standards, Technical Specifications, Technical Reports, Publicly Available Specifications (PAS) and Guides (hereafter referred to as “IEC Publication(s)”). Their preparation is entrusted to technical committees; any IEC National Committee interested in the subject dealt with may participate in this preparatory work. International, governmental and non-governmental organizations liaising with the IEC also participate in this preparation. IEC collaborates closely with the International Organization for Standardization (ISO) in accordance with conditions determined by agreement between the two organizations.
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International Standard IEC 60730-2-7 has been prepared by IEC technical committee 72: Automatic electrical controls.

This third edition cancels and replaces the second edition published in 2008. This third edition constitutes a technical revision. This new edition revises the compliance criteria of type 1.S and 2.S action, revises the requirements for filament lamp loads, adds requirements for abnormal operation in Annex H, removes some special requirements for single countries as well as updates the standard to IEC 60730-1:2010, fourth edition.

This Part 2-7 is intended to be used in conjunction with IEC 60730-1. It was established on the basis of the fourth edition (2010) of that publication. IEC 60730-1 Ed. 5 is available, and this part 2-7 will be aligned with that edition in the future. Consideration may be given to future editions of, or amendments to, IEC 60730-1.

The title of IEC 60730-2-7 Ed.3 has been updated to the title of IEC 60730-1 Ed.5.0. However, IEC 60730-2-7 Ed.3.0 has not been updated in accordance with the technical requirements in IEC 60730-1 Ed. 5.0.

This Part 2-7 supplements or modifies the corresponding clauses in IEC 60730-1 so as to convert that publication into the IEC standard: Particular requirements for timers and time switches.

Where this Part 2-7 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 2-7 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 practice are contained in the following clauses and subclauses:

- 6.3.6.101
- Table 1, Notes 101 and 103
- 7.2.9
- 11.4.104
- 17.16.101.1
- 17.16.101.3
- 17.16.103.1
- Table 15, Notes 101 and 102
- Table 16, Notes 101 and 102
- 21.101
- Annex D
- H.26.11

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In this publication:

- 1) The following print types are used:
 - Requirements proper: in roman type.
 - *Test specifications: in italic type.*
 - Explanatory matter: in smaller roman type
- 2) Subclauses, notes, tables or figures which are additional to those in Part 1 are numbered starting from 101, additional annexes are lettered AA, BB, etc.

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

CDV	Report on voting
72/926/CDV	72/959/RVC

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.

A list of all parts of the IEC 60730 series, under the general 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,
- replaced by a revised edition, or
- amended.

A bilingual version of this publication may be issued at a later date.

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AUTOMATIC ELECTRICAL CONTROLS –

Part 2-7: Particular requirements for timers and time switches

1 Scope and normative references

This clause of Part 1 is applicable except as follows:

1.1 Replacement:

In general, this part of IEC 60730 applies to timers and time switches that may use electricity, gas, oil, solid fuel, solar thermal energy, etc. or a combination thereof, including heating, air conditioning and similar applications.

This standard is also applicable to individual timers utilized as part of a control system or timers which are mechanically integral with multifunctional controls having non-electrical outputs. This standard does not apply to time-delay switches (TDS) within the scope of IEC 60669-2-3.

NOTE 1 Throughout this standard, the word "timers" means timers and time switches, unless the type is specifically mentioned.

NOTE 2 Devices which only indicate time or passage of time are not included.

NOTE 3 This standard does not apply to multi-functional controls having an integrated timing function which is not capable of being tested as a separate timing device.

1.1.1 Replacement:

This standard applies to the inherent safety, to the operating characteristics where such are associated with equipment protection and to the testing of timers used in appliances and other apparatus, electrical and non-electrical, for household and similar purposes, but also extended to industrial purposes when no dedicated product standards exist, such as that for central heating, air conditioning, process heating, etc.

Timers 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 timers for appliances within the scope of IEC 60335-1.

1.1.2 Replacement:

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

1.4 Replacement:

This standard applies also to timers incorporating electronic devices, requirements for which are contained in Annex H.

This standard applies also to timers using NTC or PTC thermistors, requirements for which are contained in Part 1, Annex J.

1.5 Normative references

This subclause of Part 1 applies except as follows:

Addition:

IEC 60669-1:1998, *Switches for household and similar fixed-electrical installations – Part 1: General requirements*¹

IEC 60669-1:1998/AMD1:1999

IEC 60669-1:1998/AMD2:2006

IEC 60695-11-10:2013, *Fire hazard testing – Part 11-10: Test flames – 50 W horizontal and vertical flame test methods*

2 Definitions

This clause of Part 1 is applicable except as follows:

2.3 Definitions relating to the function of controls

Additional definition:

2.3.101

timing cycle

program including all the switching activities involved in a start-to-finish operation of a controlled appliance

2.5 Definitions of types of control according to construction

Additional definitions:

2.5.101

plug-in timer

timer or time switch designed for direct plug-in to a socket-outlet

Note 1 to entry: The plug-in timer is equipped with conductor blades, pins or other means, protruding from the enclosure of the control or the control body itself, to match the dimensional parameters of the socket-outlet to which the control will be connected.

2.5.102

TV timer

control for television equipment that can be set by the user, switching very high inrush currents of a very short duration generated by electrical power supply components and associated electronic component parts with various electrical characteristics

Note 1 to entry: Examples are power transformers, electronic tube filaments, large electric capacitors and others in television receivers, radio and video products.

2.5.103

synchronous timer

timer or a time switch in which the transmission is effected by a device that is time-based on the frequency of the power supply for the prime mover or the load

2.5.104

hand-wound timer

timer or time switch in which the transmission is provided by actuation

¹ There exists a consolidated edition 3.2 (2007) that includes IEC 60669-1:2008 and its Amendments 1 and 2.

3 General requirements

This clause of Part 1 is applicable.

4 General notes on tests

This clause of Part 1 is applicable.

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

6.3.6 Additional subclause:

6.3.6.101 – TV timer;

NOTE In Canada and the USA, timers for use on televisions have to be declared and tested as indicated in this standard.

6.4 According to features of automatic action

6.4.3 Additional subclauses:

6.4.3.101 – a timing action which automatically resets upon loss of the electrical supply (Type 1.Q or 2.Q);

6.4.3.102 – a timing action which is interrupted upon loss of the electrical supply and resumes at the point of interruption upon restoration of the electrical supply (Type 1.R or 2.R);

6.4.3.103 – a timing action of a time switch which, after interruption of the electrical supply for any interval up to the declared period of power reserve, resumes its intended operating sequence as if no interruption of the supply has occurred (Type 1.S or 2.S);

6.4.3.104 – a timing action with a declared running accuracy in an ambient temperature of 20 °C to 25 °C (Type 1.T or 2.T);

6.4.3.105 – a timing action in which the difference between set time and actual switching time does not exceed the declared amount (Type 1.U or 2.U).

6.10 According to number of cycles of actuation (M) of each manual actuation

Additional subclauses:

6.10.101 – 500 cycles;

6.10.102 – 2 500 cycles;

6.10.103 – 5 000 cycles.

6.15 According to construction

Additional subclause:

6.15.101 – plug-in timer.

7 Information

This clause of Part 1 is applicable except as follows:

7.2 Methods of providing information

7.2.9 Addition:

NOTE In Germany, for Type 1.S or 2.S actions, the power reserve is to be marked on the timer by the letter "R", followed by the duration of the power reserve, followed by the symbol indicating the time unit as follows:

minutes min
hours h
days d
years a

Table 1

Modification:

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Replace the lines corresponding to items 7, 26, 27 and 28 by the following:

Information	Clause or subclause	Method
7 The type of load controlled by each circuit ¹⁰¹⁾	14 17	C
26 Number of cycles of actuation (M) for each manual action ¹⁰²⁾	6.10	X
27 Number of automatic cycles (A) for each automatic action ¹⁰²⁾	6.11	X
28 Ageing period (Y) for Type 1.M or 2.M action ¹⁰²⁾	6.16	X

Add the following additional items:

Information	Clause or subclause	Method
101 TV timer ¹⁰³⁾	2.5.102	C
102 Power reserve duration	6.4.3.103	D
103 Running time for manually wound switches	11.4.103	D
104 Running accuracy and setting accuracy	6.4.3.104 6.4.3.105 11.4.104	X