

Specified time relays for industrial use —

Part 1: Requirements and tests

The European Standard EN 61812-1:1996, with the incorporation of amendment A11:1999, has the status of a British Standard

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Committees responsible for this British Standard

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- Federation of the Electronics Industry
- Machinery Safety Equipment Manufacturers Association
- National Supervising Inspectorate (BSI – PC)

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National foreword

This Part of BS EN 61812 has been prepared by Technical Committee EPL/94, and is the English language version of EN 61812-1:1996, *Specified time relays for industrial use — Part 1: Requirements and tests*, including corrigendum February 1999 and amendment A11:1999 published by the European Committee for Electrotechnical Standardization (CENELEC).

It was derived by CENELEC from IEC 61812-1:1996, published by the International Electrotechnical Commission (IEC). The CENELEC common modification, introduced by amendment A11:1999, comprises the replacement of subclause 3.10.

Corrigendum February 1999 to EN 61812-1:1996 inserts the date of withdrawal of national standards conflicting with the EN.

From 1 January 1997, all IEC publications have the number 60000 added to the old number. For instance, IEC 27-1 has been renumbered as IEC 60027-1. For a period of time during the changeover from one numbering system to the other, publications may contain identifiers from both systems.

Cross-references

The British Standards which implement international or European publications referred to in this document may be found in the BSI Standards Catalogue under the section entitled “International Standards Correspondence Index” or by using the “Find” facility of the BSI Standards Electronic Catalogue.

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Summary of pages

This document comprises a front cover, an inside front cover, pages i to ii, the EN title page, pages 2 to 19 and a back cover.

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Specified time relays for industrial use Part 1: Requirements and tests

(includes amendment A11:1999)

Relais à temps spécifié pour
applications industrielles
Partie 1: Prescriptions et essais
(inclut l'amendement A11:1999)

Relais mit festgelegtem Zeitverhalten
(Zeitrelais) für industrielle Anwendungen
Teil 1: Anforderungen und Prüfungen
(enthält Änderung A11:1999)

This European Standard was approved by CENELEC on 1996-10-01, amendment A11 was approved by CENELEC on 1999-01-01. CENELEC 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.

Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Central Secretariat or to any CENELEC member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CENELEC member into its own language and notified to the Central Secretariat has the same status as the official versions.

CENELEC members are the national electrotechnical committees of Austria, Belgium, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

CENELEC

European Committee for Electrotechnical Standardization
Comité Européen de Normalisation Electrotechnique
Europäisches Komitee für Elektrotechnische Normung

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Foreword

The text of document 94/45/FDIS, future edition 1 of IEC 1812-1, prepared by IEC TC 94, All-or-nothing electrical relays, was submitted to the IEC-CENELEC parallel vote and was approved by CENELEC as EN 61812-1 on 1996-10-01.

The following dates were fixed:

- latest date by which the EN has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 1997-09-01
- latest date by which the national standards conflicting with the EN have to be withdrawn (dow) 1999-10-01

Annexes designated “normative” are part of the body of the standard. In this standard, Annex ZA is normative. Annex ZA has been added by CENELEC.

Foreword to amendment A11

This amendment was prepared by Technical Committee CENELEC TC 94, Relays. The text of the draft (prAA) was submitted to the Unique Acceptance Procedure and was approved by CENELEC as amendment A11 to EN 61812-1:1996 on 1999-01-01.

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- latest date by which the national standards conflicting with the amendment have to be withdrawn (dow) 2002-01-01

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1 General

1.1 Scope

This part of IEC 1812 applies to specified time relays, such as time delay relays, in accordance with definitions as laid down in IEC 50(446), for use in industrial applications (e.g. control, automation, signal and industrial equipment).

The term “relay” as used in this standard comprises all types of relays, other than measuring relays, with specified time function.

Depending on the field of application of these relays (e.g. for electricity generation, transmission and distribution), further standards may be applicable.

1.2 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this part of IEC 1812. At the time of publication, the editions indicated were valid. All normative documents are subject to revision, and parties to agreements based on this part of IEC 1812 are encouraged to investigate the possibility of applying the most recent editions of the normative documents indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

IEC 50(441):1984, *International Electrotechnical Vocabulary (IEV) — Chapter 441: Switchgear, controlgear and fuses*.

IEC 50(446):1983, *International Electrotechnical Vocabulary (IEV) — Chapter 446: Electrical relays*.

IEC 60-1:1989, *High-voltage test techniques — Part 1: General definitions and test requirements*.

IEC 62:1992, *Marking codes for resistors and capacitors*.

IEC 68-1:1988, *Environmental testing — Part 1: General and guidance*.

IEC 68-2-3:1969, *Environmental testing — Part 2: Tests — Test Ca: Damp heat, steady state*.

IEC 68-2-6:1995, *Environmental testing — Part 2: Tests — Test Fc: Vibration (sinusoidal)*.

IEC 68-2-27:1987, *Environmental testing — Part 2: Tests — Test Ea and guidance: Shock*.

IEC 85:1984, *Thermal evaluation and classification of electrical insulation*.

IEC 112:1979, *Method for determining the comparative and the proof tracking indices of solid insulating materials under moist conditions*.

IEC 529:1989, *Degrees of protection provided by enclosures (IP code)*.

IEC 664-1:1992, *Insulation coordination for equipment within low-voltage systems — Part 1: Principles, requirements and tests*.

IEC 664-3:1992, *Insulation coordination for equipment within low-voltage systems — Part 3: Use of coatings to achieve insulation coordination of printed board assemblies*.

IEC 695-2-1/0:1994, *Fire hazard testing — Part 2: Test methods — Section 1/sheet 0: Glow-wire test methods — General*.

IEC 695-2-1/1:1994, *Fire hazard testing — Part 2: Test methods — Section 1/sheet 1: Glow-wire end-product test and guidance*.

IEC 695-2-1/2:1994, *Fire hazard testing — Part 2: Test methods — Section 1/sheet 2: Glow-wire flammability test on materials*.

IEC 695-2-1/3:1994, *Fire hazard testing — Part 2: Test methods — Section 1/sheet 3: Glow-wire ignitability test on materials*.

IEC 721-3-3:1994, *Classification of environmental conditions — Part 3: Classification of groups of environmental parameters and their severities — Section 3: Stationary use at weather-protected locations*.

IEC 947-1:1988, *Low-voltage switchgear and controlgear — Part 1: General rules*.

IEC 947-5-1:1990, *Low-voltage switchgear and controlgear — Part 5: Control circuit devices and switching elements — Section 1: Electromechanical control circuit devices*.

IEC 947-5-2:1992, *Low-voltage switchgear and controlgear — Part 5: Control circuit devices and switching elements — Section 2: Proximity switches*.

IEC 999:1990, *Connecting devices — Safety requirements for screw-type and screwless-type clamping units for electrical copper conductors*.

IEC 1000-4-2:1995, *Electromagnetic compatibility (EMC) — Part 4: Testing and measurement techniques — Section 2: Electrostatic discharge immunity test*.

IEC 1000-4-3:1995, *Electromagnetic compatibility (EMC) — Part 4: Testing and measurement techniques — Section 3: Radiated, radio-frequency, electromagnetic field immunity test*.

IEC 1000-4-4:1995, *Electromagnetic compatibility (EMC) — Part 4: Testing and measurement techniques — Section 4: Electrical fast transient/burst immunity test*.

IEC 1000-4-5:1995, *Electromagnetic compatibility (EMC) — Part 4: Testing and measurement techniques — Section 5: Surge immunity test*.

CISPR 11:1990, *Limits and methods of measurement of electromagnetic disturbance characteristics of industrial, scientific and medical (ISM) radio-frequency equipment*.

CISPR 22:1993, *Limits and methods of measurement of radio disturbance characteristics of information technology equipment*.

2 Definitions

For the purpose of this part of IEC 1812, the following definitions contain terminology applicable to specified time relays.

Some of the terms used in this standard are defined in IEC 50(441) and IEC 50(446).

2.1 setting accuracy

difference between the measured value of the specified time and the reference value set on the scale

2.2 effect of influence

degree to which the change of an influencing factor within its nominal range has an effect on the specified time

2.3 load series relay

time delay relay to be connected in series with the load

2.4 recovery time

necessary time to start the relay again with the defined accuracy after the input energizing quantity has been taken away [IEV 446-17-21, modified]

2.5 minimum control pulse

shortest time of the input energizing quantity to start and complete the time function

2.6 repeatability

difference between the upper and lower limits of the confidence range from several time measurements of a specified time relay under identical stated conditions

Preferably the repeatability is indicated as a percentage of the mean value of all measured values

2.7 conditional short-circuit current

prospective current that a circuit or a switching device, protected by a specified short-circuit protective device, can satisfactorily withstand for the total operating time of that device under specified conditions of use and behaviour (see 2.5.29 of IEC 947-1)

2.8 voltage drop

voltage measured across the active output of a specified time relay, when carrying the load current under stated conditions (see 4.3.1.4, modified of IEC 947-5-2)

2.9 off-state current

current which flows through the load circuit of a specified time relay in the off-state (see 2.4.5.1, modified of IEC 947-5-2)

2.10 short-time withstand current

current that an output circuit of a specified time relay in the closed position can carry during a specified short time under prescribed conditions of use and behaviour [IEV 441-17-17, modified]

2.11 specified time

specified characteristic of a relay at a given type of function, e.g. operation time, release time, wiping time, impulse time, interval [IEV 446-17-14, modified]

2.12 power port

point at which the supply voltage (either a.c. or d.c.) is connected to the specified time relay

2.13 control port

additional port for the starting of functions whilst supply voltage is applied, or for the connection of a remote potentiometer, etc.

2.14 output port

port containing relay contacts or static contacts

2.15 enclosure port

physical boundary of the specified time relay through which electromagnetic fields may radiate or impinge