

INTERNATIONAL STANDARD



**Time relays and coupling relays for industrial and residential use –
Part 1: Requirements and tests**

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CONTENTS

FOREWORD.....	7
1 Scope.....	10
2 Normative references	10
3 Terms and definitions	12
3.1 Terms and definitions related to general terms.....	13
3.2 Terms and definitions of time relay types	17
4 Classification.....	25
4.1 Switching element.....	25
4.2 Mechanical construction.....	25
4.3 Device mounting	25
4.4 Connection	25
4.5 Environment	25
5 Influence quantities	25
6 Rated values	26
6.1 General.....	26
6.2 Input voltage and frequency	26
6.3 Release voltage	27
6.4 Power consumption.....	27
6.5 Output circuit	27
6.5.1 General	27
6.5.2 Electromechanical output circuit	27
6.5.3 Solid state output circuit	28
6.5.4 Endurance and operating frequency	28
6.5.5 Conditional short-circuit current	29
6.6 Ambient temperature.....	29
6.7 Transport and storage temperature.....	29
6.8 Humidity	29
6.9 Pollution degree.....	29
6.10 Altitude	29
6.11 Timing circuit function	30
6.11.1 General	30
6.11.2 Setting accuracy.....	30
6.11.3 Repeatability	30
6.11.4 Recovery time and minimum control impulse	30
7 Provisions for testing.....	30
7.1 General.....	30
7.2 Type test.....	31
7.3 Routine test	32
7.4 Sampling test.....	32
8 Documentation and marking	32
8.1 Data.....	32
8.2 Marking.....	35
9 Heating.....	35
9.1 General.....	35
9.2 Test conditions	36
9.3 Heating of terminals.....	37

9.3.1	General	37
9.3.2	Heating of screw terminals and screwless terminals	37
9.3.3	Heating of quick-connect terminations	37
9.3.4	Heating of sockets	38
9.3.5	Heating of alternative termination types	38
9.4	Heating of accessible parts	38
8.5	Heating of insulating materials	38
9.5	Ball pressure test	39
10	Basic operating function	39
10.1	General	39
10.2	Operate	40
10.3	Release	40
10.4	Time function	40
10.4.1	General	40
10.4.2	Functional test at reference values of input quantities	40
10.4.3	Influencing effects Effect of influence of voltage and temperature	41
11	Insulation Dielectric strength and impulse withstand	41
11.1	General	41
11.2	Preconditioning	41
11.3	Dielectric strength Insulation test	42
11.3.1	General	42
11.3.2	Impulse withstand test	42
11.3.3	Dielectric AC power frequency voltage test	43
10.4	Protection against direct contact	45
12	Electrical endurance	45
12.1	General	45
12.2	Resistive loads, inductive loads, and special loads	45
12.3	Low energy loads	45
13	Conditional short-circuit current of an output circuit	45
13.1	General	45
13.2	Test procedure	45
13.3	Test circuit electromechanical output circuit	46
13.4	Test circuit solid state output circuit	46
13.5	Condition of switching element after test	47
14	Insulation coordination and protection against electric shock	47
14.1	General	47
14.2	Clearances and creepage distances	47
14.2.1	General	47
14.2.2	Clearances	49
14.2.3	Creepage distances	50
13.4	Measurement of creepage distances and clearances	51
14.3	Solid insulation	51
14.4	Protection against direct contact	51
15	Mechanical strength	51
15.1	General	51
15.2	Mechanical strength of terminals and current-carrying parts	52
15.2.1	General	52
15.2.2	Mechanical strength of screw terminals and screwless terminals	52

15.2.3	Mechanical strength of flat quick-connect terminations	52
15.2.4	Mechanical strength of sockets	52
15.2.5	Mechanical strength of alternative termination types	52
16	Heat and fire resistance	53
16.1	General	53
16.2	Glow-wire test	53
17	Vibration and shock	53
17.1	Vibration	53
17.2	Shock	54
18	Electromagnetic compatibility (EMC)	54
18.1	General	54
18.2	EMC Immunity	55
18.3	EMC Radiated and conducted emission	58
19	Cybersecurity for industrial automation and control systems (IACS)	58
20	Environmental information	58
20.1	Environmentally conscious design process	58
20.2	Procedure to establish material declaration	58
Annex A (informative) Ball pressure test		
Annex A (informative) Setting accuracy, repeatability and effect of influence calculation		
A.1	General	60
A.2	Example of calculation	60
Annex B (informative) Risk assessment		
B.1	General	61
B.2	Risk assessment procedure	61
B.3	Achieving tolerable risk	62
B.4	Application of risk assessment procedures (proposal for the user)	66
Annex C (normative) Tests for EMC		
C.1	General	67
C.2	EMC immunity	67
C.2.1	General	67
C.2.2	Performance criteria	67
C.3	EMC radiated and conducted emission	71
C.3.1	General	71
C.3.2	Conducted radio-frequency emission tests	71
C.3.3	Radiated radio-frequency emission tests	71
Bibliography		
Figure 1 – Definition of ports		
Figure 2 – Power ON-delay relay		
Figure 3 – Power OFF-delay relay		
Figure 4 – OFF-delay relay with control signal		
Figure 5 – ON- and OFF-delay relay with control signal		
Figure 6 – Flasher relay		
Figure 7 – Star-delta relay		
Figure 8 – Summation time relay		
Figure 9 – Pulse delayed relay		

Figure 10 – Pulse delayed relay with control signal	22
Figure 11 – Interval relay	22
Figure 12 – Interval relay with control signal	23
Figure 13 – Retriggerable interval relay with control signal ON	23
Figure 14 – Retriggerable interval relay with control signal OFF	24
Figure 15 – Maintained time relay	24
Figure 16 – Test circuit electromechanical output, conditional short-circuit current	46
Figure 17 – Test circuit solid state output, conditional short-circuit current	47
Figure B.1 – Iterative process of risk assessment and risk reduction	62
Figure B.2 – Risk reduction	64
Figure B.3 – Example of the time relay circuit block diagram	65
Table 1 – Influence quantities and reference values	25
Table 2 – Preferred values of endurance	28
Table 3 – Preferred values of maximum permissible operating frequency	28
Table 4 – Recommended final values of the setting range	30
Table 5 – Type testing	31
Table 6 – Routine testing	32
Table 7 – Required time relay or coupling relay information	33
Table 8 – Thermal classification	36
Table 9 – Cross-sectional areas and lengths of conductors dependent on the current carried by the terminal	37
Table 10 – Maximum steady state current dependent on the connector size	38
Table 11 – Temperature rise limits of accessible parts	39
Table 12 – Changing of influencing quantities	41
Table 13 – Impulse test for basic insulation	43
Table 14 – Dielectric test voltage for basic insulation for devices suitable devices suitable for use in single-phase three- or two-wire AC and DC systems	44
Table 15 – Dielectric test voltage for basic insulation for devices suitable for use in three-phase four or three-wire AC systems	44
Table 16 – Environmental conditions influencing EMC	49
Table 16 – Minimum clearances for basic insulation	49
Table 17 – Immunity tests for industrial environments	50
Table 17 – Minimum clearances in controlled overvoltage conditions for internal circuits	50
Table 18 – Immunity tests for residential, commercial and light industrial environments	50
Table 18 – Minimum creepage distances for basic insulation	50
Table A.1 – Calculation formulae	60
Table B.1 – Examples of the relation between failure mode, consequences and hazard	65
Table B.2 – Severity of harm	66
Table B.3 – Probability of harm	66
Table B.4 – Risk category	66
Table C.1 – Environmental conditions influencing EMC	67
Table C.2 – Immunity tests for industrial environments	69

Table C.3 – Immunity tests for residential, commercial and light-industrial environments	70
Table C.4 – Terminal disturbance voltage limits for conducted radio-frequency emission (for power port)	71
Table C.5 – Radiated emission test limits.....	71

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[IEC 61812-1:2023](#)

<https://standards.iteh.ai/catalog/standards/iec/53361bdd-3add-4f46-b0dc-25001780d995/iec-61812-1-2023>

INTERNATIONAL ELECTROTECHNICAL COMMISSION

**TIME RELAYS AND COUPLING RELAYS FOR
INDUSTRIAL AND RESIDENTIAL USE –****Part 1: Requirements and tests**

FOREWORD

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IEC 61812-1 has been prepared by IEC technical committee 94: Electrical relays. It is an International Standard.

This third edition cancels and replaces the second edition published in 2011. This edition constitutes a technical revision.

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

- a) update of references;
- b) addition of requirements for risk assessment;
- c) addition of requirements for routine test;
- d) renumbering of clauses to bring them into a more logical order;
- e) clarification of the requirement for shock;
- f) addition of cybersecurity requirements for industrial automation and control systems;
- g) addition of environmentally conscious design requirement;
- h) addition of common data dictionary reference;
- i) addition of terms and definitions of relay types;
- j) addition of coupling relays in title;
- k) addition of coupling relays in scope.

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

FDIS	Report on voting
94/843/FDIS	94/889/RVD

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

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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. The main document types developed by IEC are described in greater detail at www.iec.ch/standardsdev/publications.

A list of all parts of the IEC 61812 series can be found, under the general title *Time relays and coupling relays for industrial and residential use*, on the IEC website.

Future documents in this series will carry the new general title as cited above. Titles of existing documents in this series will be updated at the time of the next edition.

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 in the data related to the specific document. At this date, the document will be

- reconfirmed,
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TIME RELAYS AND COUPLING RELAYS FOR INDUSTRIAL AND RESIDENTIAL USE –

Part 1: Requirements and tests

1 Scope

~~This part of the IEC 61812 applies to time relays for industrial applications (e.g. control, automation, signal and industrial equipment).~~

~~It also applies to time relays for automatic electrical controls for use in, on, or in association with equipment for residential and similar use.~~

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

~~NOTE – Depending on the field of application of these relays (for example automatic electrical controls for household and similar use, switches for household and similar fixed electrical installations), further standards may be applicable, for example IEC 60730-2-7 or IEC 60669-2-3.~~

This part of IEC 61812 applies to time relays and coupling relays for industrial applications (for example control, automation, signal and industrial equipment) and for automatic electrical controls for use in, on, or in association with equipment for residential and similar use.

The term “relay” as used in this document comprises all types of time relays and coupling relays, other than measuring relays.

NOTE 1 Time relays and coupling relays can be used for industrial application (for example control, automation, signal and industrial equipment) and for automatic electrical controls for use in, on, or in association with equipment for residential and similar use.

NOTE 2 Measuring relays are handled by the IEC TC95.

This document defines type test and routine test to confirm the service condition. Subclause 3.2 provides definitions for different types of time relays in use in the IEC 61812 series.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

IEC 60050-444:2002, *International Electrotechnical Vocabulary (IEV) – Part 444: Elementary relays*

IEC 60050-445:2010, *International Electrotechnical Vocabulary (IEV) – Part 445: Time relays*

~~IEC 60068 (all parts), *Environmental testing*~~

IEC 60068-2-2:2007, *Environmental testing – Part 2-2: Tests – Test B: Dry heat*

IEC 60068-2-6:2007, *Environmental testing – Part 2-6: Tests – Test Fc: Vibration (sinusoidal)*

IEC 60068-2-27:2008, *Environmental testing – Part 2-27: Tests – Test Ea and guidance: Shock*

IEC 60085:2007, *Electrical insulation – Thermal evaluation and designation*

IEC 60112:~~2003~~2020, *Method for the determination of the proof and the comparative tracking indices of solid insulating materials*

IEC 60529:1989, *Degrees of protection provided by enclosures (IP Code)*

IEC 60529:1989/AMD1:1999

IEC 60529:1989/AMD2:2013

~~IEC 60664 (all parts), *Insulation coordination for equipment within low-voltage systems*~~

IEC 60664-1:~~2007~~2020, *Insulation coordination for equipment within low-voltage systems – Part 1: Principles, requirements and tests*

IEC 60664-3:~~2003~~2016, *Insulation coordination for equipment within low-voltage systems – Part 3: Use of coating, potting or moulding for protection against pollution*

IEC 60664-4:2005, *Insulation coordination for equipment within low-voltage systems – Part 4: Consideration of high-frequency voltage stress*

~~IEC 60664-5:2007, *Insulation coordination for equipment within low-voltage systems – Part 5: Comprehensive method for determining clearances and creepage distances equal to or less than 2 mm*~~

IEC 60695-2-11:~~2000~~2021, *Fire hazard testing – Part 2-11: Glowing/hot-wire based test methods – Glow-wire flammability test method for end products (GWEPT)*

IEC 60695-10-2:~~2003~~2014, *Fire hazard testing – Part 10-2: Abnormal heat – Ball pressure test method*

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IEC 60947-5-1:2016, *Low-voltage switchgear and controlgear – Part 5-1: Control circuit devices and switching elements – Electromechanical control circuit devices*

IEC 60947-5-4:2002, *Low-voltage switchgear and controlgear – Part 5-4: Control circuit devices and switching elements – Method of assessing the performance of low-energy contacts – Special tests*

IEC 60947-5-4:2002/AMD1:2019

IEC 60999-1:1999, *Connecting devices – Electrical copper conductors – Safety requirements for screw-type and screwless-type clamping units – Part 1: General requirements and particular requirements for clamping units for conductors from 0,2 mm² up to 35 mm² (included)*

IEC 61000-4-2:2008, *Electromagnetic compatibility (EMC) – Part 4-2: Testing and measurement techniques – Electrostatic discharge immunity test*

IEC 61000-4-3:~~2006~~2020, *Electromagnetic compatibility (EMC) – Part 4-3: Testing and measurement techniques – Radiated, radio-frequency, electromagnetic field immunity test*

IEC 61000-4-4:~~2004~~2012, *Electromagnetic compatibility (EMC) – Part 4-4: Testing and measurement techniques – Electrical fast transient/burst immunity test*

IEC 61000-4-5:~~2005~~2014, *Electromagnetic compatibility (EMC) – Part 4-5: Testing and measurement techniques – Surge immunity test*

IEC 61000-4-5:2014/AMD1:2017

IEC 61000-4-6:20082013, *Electromagnetic compatibility (EMC) – Part 4-6: Testing and measurement techniques – Immunity to conducted disturbances, induced by radio-frequency fields*

IEC 61000-4-8:2009, *Electromagnetic compatibility (EMC) – Part 4-8: Testing and measurement techniques – Power frequency magnetic field immunity test*

IEC 61000-4-11:20042020, *Electromagnetic compatibility (EMC) – Part 4-11: Testing and measurement techniques – Voltage dips, short interruptions and voltage variations immunity tests for equipment with input current up to 16 A per phase*

IEC 61000-4-34:2005, *Electromagnetic compatibility (EMC) – Part 4-34: Testing and measurement techniques – Voltage dips, short interruptions and voltage variations immunity tests for equipment with mains current more than 16 A per phase*
IEC 61000-4-34:2005/AMD1:2009

IEC 61210:2010, *Connecting devices – Flat quick-connect terminations for electrical copper conductors – Safety requirements*

IEC 61810-1:20082015, *Electromechanical elementary relays – Part 1: General and safety requirements*
IEC 61810-1:2015/AMD1:2019

IEC 61984:2008, *Connectors – Safety requirements and tests*

IEC 62314:20062022, *Solid-state relays – Safety requirements*

CISPR 11:20092015, *Industrial, scientific and medical equipment – Radio-frequency disturbance characteristics – Limits and methods of measurement*
~~Amendment 1 (2010)~~

CISPR 11:2015/AMD1:2016

CISPR 11:2015/AMD2:2019

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~~CISPR 22:2008, *Information technology equipment – Radio disturbance characteristics – Limits and methods of measurement*~~

ISO 9223:2012, *Corrosion of metals and alloys – Corrosivity of atmospheres – Classification, determination and estimation*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in IEC 60050-444 and IEC 60050-445 and the following apply.

~~NOTE – Terms having the same or nearly the same meaning are printed in boldface on separate lines and can be used as an alternative.~~

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

- IEC Electropedia: available at <https://www.electropedia.org/>
- ISO Online browsing platform: available at <https://www.iso.org/obp>