

INTERNATIONAL STANDARD

IEC 62314

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Solid-state relays

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

SOLID-STATE RELAYS

FOREWORD

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International Standard IEC 62314 has been prepared by technical committee 94: All-or-nothing electrical relays.

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

FDIS	Report on voting
94/232/FDIS	94/235/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.

The committee has decided that the contents of this publication will remain unchanged until the maintenance result date indicated on the IEC web site 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- withdrawn;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.

SOLID-STATE RELAYS

1 Scope and object

This International Standard applies to particular all-or-nothing electrical relays denominated solid-state relays intended for performing electrical operations by single step function changes to the state of electric circuits between the OFF-state and the ON-state and vice versa. It is applicable to solid-state relays with rated voltages up to 750 V and with a.c. output current up to 160 A.

NOTE Requirements for solid-state relays with d.c. output circuits are under consideration.

This standard deals with solid-state relays which are intended for incorporation in other products or equipment. As such, solid state relays are considered to be components and this standard defines the basic safety-related and functional requirements for solid-state relays as stand-alone components.

Such solid-state relays are incorporated in products or equipment which themselves have to comply with the relevant product and/or application standard(s) to meet their intended application. The following are examples of such applications:

- general industrial equipment;
- electrical facilities;
- electrical machines;
- electrical appliances;
- office communications;
- building automation and environmental control;
- automation and process control;
- electrical installation engineering;
- medical engineering;
- telecommunications;
- vehicle engineering;
- transportation engineering;
- lighting control.

Solid state relays are components (not stand alone devices) and as such do not perform a direct function. Therefore, no EMC requirements are included in this standard.

NOTE This is in line with the European EMC Directive.

Where the application of a solid-state relay determines additional requirements such as EMC and overcurrent protection, the solid-state relay shall be assessed in accordance with the relevant IEC standard(s).

Solid-state switching devices with monolithic structures fall within the scope of IEC subcommittee 47E and are not covered in this standard.

Semiconductor controllers and contactors fall within the scope of the IEC 60947 series of standards – *Low-voltage switchgear and controlgear* – developed by IEC subcommittee 17B and are not covered in this standard.

Compliance with the requirements of this standard is verified by the type tests indicated.

The object of this standard is to state:

- the characteristics of solid-state relays;
- the requirements which solid-state relays shall comply with reference to
 - a) their operation and behaviour;
 - b) their dielectric properties;
 - c) the degrees of protection provided by their enclosures, where applicable;
- the tests verifying that the requirements have been met, and the test methods to be adopted;
- the information to be given with the solid-state relay or in the manufacturer's documentation.

2 Normative references

The following referenced documents are indispensable for the application 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 60038:1983, *IEC standard voltages*
Amendment 1 (1994)
Amendment 2 (1997)

IEC 60050-195:1998, *International Electrotechnical Vocabulary (IEV) – Part 195: Earthing and protection against electric shock*

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

IEC 60068-2-1:1990, *Environmental testing – Part 2: Tests. Tests A: Cold*

IEC 60068-2-2:1974, *Environmental testing – Part 2: Tests. Tests B: Dry heat*

IEC 60068-2-14:1984, *Environmental testing – Part 2: Tests. Test N: Change of temperature*
Amendment 1 (1986)

IEC 60068-2-20:1979, *Environmental testing – Part 2: Tests. Test T: Soldering*
Amendment 2 (1987)

IEC 60068-2-78:2001, *Environmental testing – Part 2-78: Tests – Test Cab: Damp heat, steady state*

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

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

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

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

IEC 60695-2-10:2000, *Fire hazard testing – Part 2-10: Glowing/hot-wire based test methods – Glow-wire apparatus and common test procedure*

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

IEC 60695-11-10:2003, *Fire hazard testing – Part 11-10: Test flames – 50 W horizontal and vertical flame test methods*

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 61210:1993, *Connecting devices – Flat quick-connect terminations for electrical copper conductors – Safety requirements*

IEC 61760-1:1998, *Surface mounting technology – Part 1: Standard method for the specification of surface mounting components (SMDs)*