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INTERNATIONAL STANDARD

NORME INTERNATIONALE

Electrical relays – Tests and measurements – Part 25: Magnetic interference

Relais électriques – Essais et mesurages – Partie 25 : Perturbations par les champs magnétiques

IEC 63522-25:2025-02(en-fr)

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Electrical relays – Tests and measurements – Part 25: Magnetic interference

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CONTENTS

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ELECTRICAL RELAYS – TESTING AND MEASUREMENT –

Part 25: Magnetic interference

FOREWORD

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IEC 63522-25 has been prepared by IEC technical committee 94: Electrical relays. It is an International Standard.

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

Draft	Report on voting
94/1055/FDIS	94/1115/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. The main document types developed by IEC are described in greater detail at www.iec.ch/publications.

A list of all parts of IEC 63522 series, published under the general title *Electrical relays – Tests and measurements*, can be found on the IEC website.

This International Standard is to be used in conjunction with IEC 63522-0:–[1].

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,
- withdrawn, or
- revised.

[1] Under preparation. Stage at the time of publication: IEC CDV 63522-0:2024.

ELECTRICAL RELAYS – TESTING AND MEASUREMENT –

Part 25: Magnetic interference

1 Scope

This part of IEC 63522 is used for testing along with the appropriate severities and conditions for measurements and tests designed to assess the ability of DUTs to perform under expected conditions of transportation, storage and all aspects of operational use.

This document defines a standard test method to check the magnetic interference between relays under operating conditions and their influence on other relays in the neighbourhood.

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 60060-1, *High-voltage test techniques – Part 1: General definitions and test requirements*

IEC 63522-0:–[2], *Electrical relays – Tests and measurements – Part 0: Testing – General and Guidance*

IEC 63522-4, *Electrical relays – Tests and measurements – Part 4: Dielectric strength test*

IEC 63522-7, *Electrical relays – Tests and measurements – Part 7: Functional tests*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in IEC 63522-0 apply.

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

- IEC Electropedia: available at https://www.electropedia.org/
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[2] Under preparation. Stage at the time of publication: IEC CDV 63522-0:2024.

4 Test procedure

4.1 Purpose

The test checks that the functional performance values of the relay remain within specified limits when the relay is subjected to the effects of external magnetic inductions.

4.2 Procedure

4.2.1 Method 1

The relay shall be mounted by suitable non-magnetic means within the central volume of a test coil. The axis of maximum sensitivity of the relay shall be aligned with the longitudinal axis of the test coil. Operate and release values shall be measured in accordance with IEC 63522-7 in zero magnetic field in air and

– for magnetically shielded relays: in (8×10^3) A/m;

– for all other relays: in ($0,8 \times 10^3$) A/m,

magnetic field of both polarities.

4.2.2 Method 2

The relay under test and eight similar relays of the same type shall be mounted in the same physical orientation by non-magnetic means, as shown in Figure 1, unless otherwise specified by the manufacturer. Operate and release values of the relay under test shall be measured as specified in IEC 63522-7, with the coils of the eight outer relays energized at rated voltage, and with the coils not energized. The magnetic polarity of each relay shall be similarly orientated.

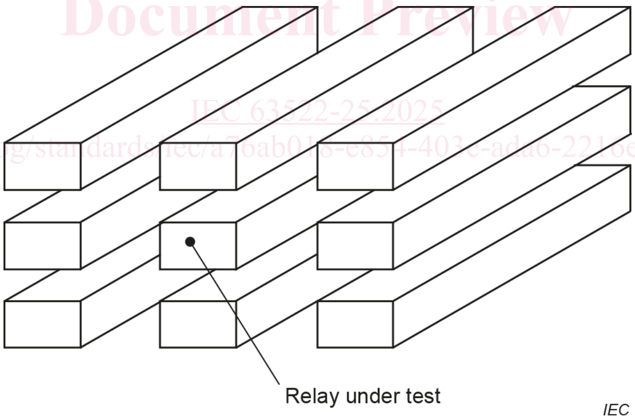


Figure 1 – Mounting array for adjacent similar relays

The relays shall be placed in all possible usage combinations, as shown in Figure 2.

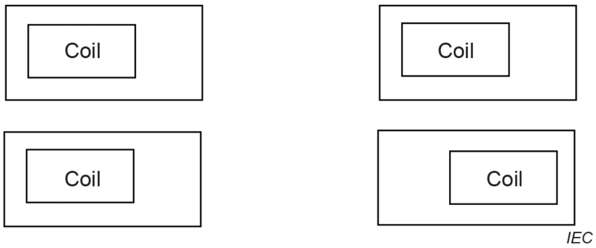
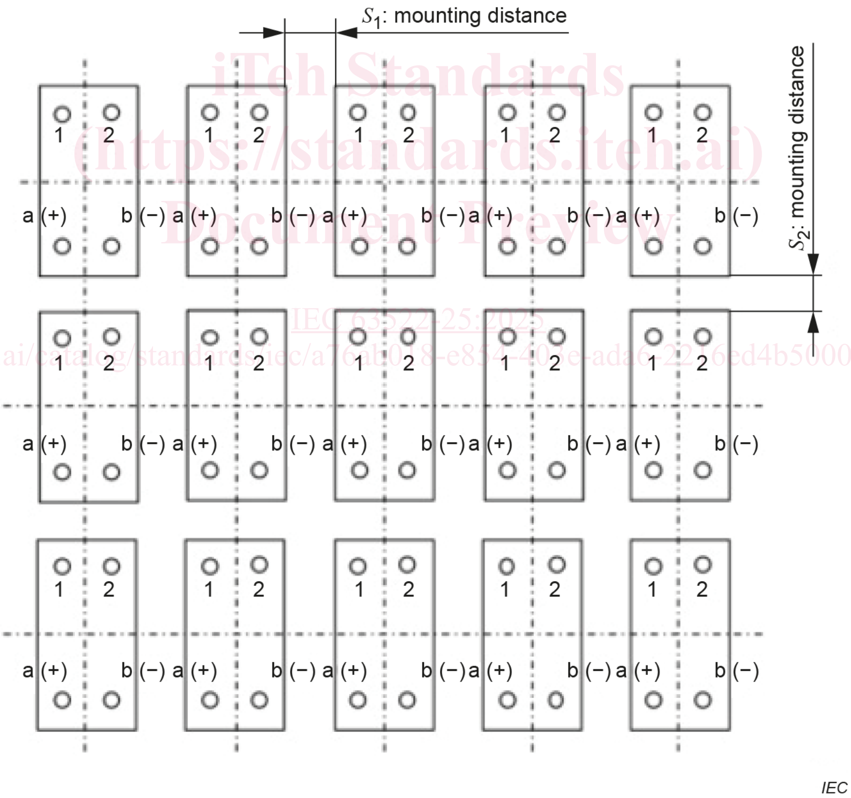


Figure 2 – Mounting direction for adjacent similar relays

For reed relays, the following applies:

The manufacturer shall declare different values for functional operate voltage and release voltage between single mounting and multi mounting (i.e. reed relays are mounted in array arrangement).

The mounting grid pattern shall be as specified by the manufacturer. See Figure 3 for an example, all relevant details of the test arrangement (e.g., S_1: horizontal mounting distance and S_2: vertical mounting distance and coil polarity) shall be indicated in the test report.



Key

1, 2 contact terminals, a, b: coil terminals

S_1 horizontal mounting distance between relays

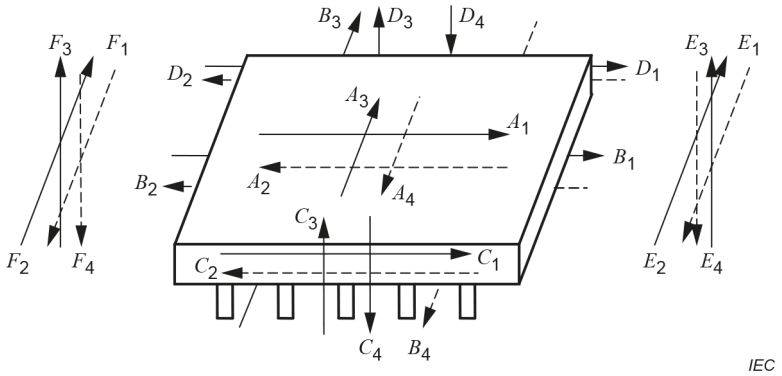
S_2 vertical mounting distance between relays

Figure 3 – Example of test arrangement for multi mounting

4.2.3 Method 3

The relay to be tested shall be mounted by non-magnetic means. A conducting wire of 0,5 mm diameter shall be placed on the test relay surface in 24 directions as shown in Figure 4. One current impulse with wavesape 1/20 µs in accordance with IEC 60060-1 shall be applied in each of these directions. Operate and release values of the relay under test shall be measured as specified in IEC 63522-7 in each of the wire positions after the respective current impulse. The following current impulse shall be used, unless otherwise specified by the manufacturer:

– impulse shape: in conformity with the voltage impulses as specified in IEC 63522-4;
– test current: 1 kA.



A_1 to F_4 Test current directions

Figure 4 – Directions of the test current for magnetic interference test, method 3

4.3 Conditions to be specified

The conditions to be specified are the following:

a) method 1, 2 or 3;
b) method 1: dimensions of the test coil;
c) method 2: mounting grid pattern;
d) method 3:
   - number of current impulses and their frequency, if more than one impulse,
   - impulse shape;
e) any particular procedure, if the above is not applicable;
f) admissible limits of the operate and release/reset values.

5 Evaluation

5.1 General

The evaluation shall state that the products fulfil the requirements, and that the function is ensured.