SLOVENSKI STANDARD
SIST EN 50578:2013

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Železniške naprave - Enosmerni signalni releji

Railways applications - Direct current signalling relays

Bahnanwendungen - Gleichstrom-Signalrelais

Applications ferroviaires - Relais de signalisation à courant continu

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Railways applications - Direct current signalling relays

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CENELEC

European Committee for Electrotechnical Standardization
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Contents

Foreword

This document (EN 50578:2013) has been prepared by SC 9XA, "Communication, signalling and processing systems", of Technical Committee CENELEC TC 9X, "Electrical and electronic applications for railways".

The following dates are fixed:

• latest date by which this document has to be implemented at national level by publication of an identical national standard or by endorsement	(dop)	2014-05-20
• latest date by which the national standards conflicting with this document have to be withdrawn	(dow)	2016-05-20

This document is a transposition of the UIC leaflet 736, *Signalling relays*.

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Introduction

This European Standard gives a set of generic and specific requirements for direct current signalling relays.

This European Standard introduces a set of recommendations and requirements for signalling relay characteristics, construction, magnetic system, contacts and insulation. Requirements are coordinated with present international standards on all-or-nothing relays.

1 Scope

This European Standard gives requirements for direct current relays intended for safety-related applications in railway signalling installations.

This European Standard is applicable to monostable relays. However it can also be used as a guide for other relays such as with bistable relays.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 50124-1, *Railway applications — Insulation coordination — Part 1: Basic requirements — Clearances and creepage distances for all electrical and electronic equipment*

EN 50125-3:2003, *Railway applications — Environmental conditions for equipment — Part 3: Equipment for signalling and telecommunications*

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

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

3.1
all-or-nothing relay
electrical relay, which is intended to be energised by a quantity, the value of which is either within its operative range or effectively zero

Note 1 to entry: "All-or-nothing relays" include both "elementary relays" and "time relays".

[SOURCE: IEC 60050-444:2002, 444-01-02]

3.2
armature
moveable part of a relay that controls contact members

3.3
bistable relay
electrical relay which, having responded to an energising quantity and having changed its condition, remains in that condition after the quantity has been removed; a further appropriate energisation is required to make it change its condition

[SOURCE: IEC 60050-444:2002, 444-01-08]

3.4
bounce time
for a contact which is closing/opening its circuit, time interval between the instant when the contact circuit first closes/opens and the instant when the circuit is finally closed/opened

[SOURCE: IEC 60050-444:2002, 444-05-04]

3.5
break contact (for elementary relays)
contact which is open when the relay is in its operate condition and which is closed when the relay is in its release condition

[SOURCE: IEC 60050-444:2002, 444-04-18]

3.6
change-over contact
combination of two contact circuits with three contact members, one of which is common to the two contact circuits; such that when one of these contact circuits is open, the other is closed

[SOURCE: IEC 60050-444:2002, 444-04-19]

3.7
contact gap
gap between the contact points when the contact circuit is open

[SOURCE: IEC 60050-444:2002, 444-04-09]

3.8
contact member (for elementary relays)
conductive part designed to co-act with another to close or open the output circuit

[SOURCE: IEC 60050-444:2002, 444-04-05]

3.9
contact force
force which two contact members exert against each other at their contact points in the closed position

[SOURCE: IEC 60050-444:2002, 444-04-10]

3.10
contact point
part of a contact member at which the contact circuit closes or opens

[SOURCE: IEC 60050-444:2002, 444-04-06]

3.11
contact wipe
relative rubbing movement of contact points after they have touched

[SOURCE: IEC 60050-444:2002, 444-04-12]

3.12
drop-away current
maximum current through the coil that, starting from the nominal current value, produces the opening of all the make contacts

3.13
electromechanical relay
electrical relay in which the intented response results mainly from the movement of mechanical elements

[SOURCE: IEC 60050-444:2002, 444-01-04]

3.14
elementary relay
all-or-nothing relay which operates and releases without any intentional time delay

[SOURCE: IEC 60050-444:2002, 444-01-03]

3.15
make contact (for elementary relays)
contact which is closed when the relay is in its operate condition and which is opened when the relay is in its release condition

[SOURCE: IEC 60050-444:2002, 444-04-17]

3.16
monostable relay
electrical relay which, having responded to an energising quantity and having changed its condition, returns to its previous condition when that quantity is removed

[SOURCE: IEC 60050-444:2002, 444-01-07]

3.17
nominal current
current passing through the coil of the relay when the coil is supplied with nominal voltage

3.18
operate condition (for elementary relays)
for a monostable relay, specified condition of the relay when it is energised by the specified energising quantity and has responded to that quantity; for a bistable relay, the condition other than the release condition as declared by the manufacturer

[SOURCE: IEC 60050-444:2002, 444-02-02]

3.19
pick-up current (compression)
minimum current through the coil that, starting from a null value, is necessary to move the armature from the release position to the operate position and apply the specified contact force, closing all the make contacts

3.20
pick-up current (service value)
minimum current through the coil that, starting from a null value, is able to move the armature closing all the make contacts

3.21
relay with forcibly guided (mechanically linked) contacts
elementary relay with at least one make contact and at least one break contact and including mechanical measures to prevent any make contact(s) and any break contact(s) being in the closed position simultaneously

[SOURCE: EN 50205:2002, 3.3]

3.22
release condition (for elementary relays)
for a monostable relay, specified condition of the relay when it is not energised; for a bistable relay, one of the conditions, as declared by the manufacturer

[SOURCE: IEC 60050-444:2002, 444-02-01]

4 Classification

The requirements of the various categories of signalling relays required to guarantee installation with the degree of reliability and safety desirable for operating purposes, depend on the functions to be fulfilled by the relays and the type of circuit with which they are to be used.

Bearing in mind these characteristics, a distinction may be made between the following types of signalling relays:

– Type N (non-proved relays)

  Relays themselves fulfilling all the safety conditions without the aid of other relays or without control of operations in the circuit.

– Type C (proved relays)

  Relays for which the safety conditions are guaranteed by control of operations in the circuit.