



SLOVENSKI STANDARD
SIST EN 50032:1998

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Low-voltage switchgear and controlgear for industrial use. Inductive proximity switches - Definitions, classification and designation

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Industrielle Niederspannungs-Schaltgeräte - Induktive Näherungsschalter - Begriffe, Einteilung, Bezeichnung

Appareillage industriel à basse tension - Détecteurs de proximité inductifs - Définitions, classification et désignation

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English version

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

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REPUBLIKA SLOVENIJA
 MINISTRSTVO ZA ZNANOST IN TEHNOLOGIJO
 Urad RS za standardizacijo in meroslovje
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PREVZET PO METODI RAZGLASITVE

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CENELEC

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

General Secretariat: rue Bréderode 2, B-1000 Brussels

This European Standard has been prepared by the CENELEC Technical Committee 17X.

1. Scope

This standard defines terms related to contactless inductive proximity switches, with one sensing face, and specifies the classification and designation to be used for such switches.

2. General definitions

2.1 inductive proximity switch. An inductive proximity switch is a device producing a high frequency electromagnetic field in a sensing zone and having an electric contactless output.

The output signal is determined by the presence or the absence in the electromagnetic field of a metallic object of sufficient size.

2.2 sensing face. The sensing face is a flat surface of the proximity switch through which the high frequency electromagnetic field emerges.

NOTE. The sensing face is marked by the manufacturer.

2.3 reference axis. A reference axis is an axis perpendicular to the sensing face and passing through its centre.

2.4 target. A target is an object used for making comparative measurements of the operating distance, its characteristics are specified in the standard EN 50 010.

The target plane shall be maintained parallel to the sensing face of the proximity switch.

2.5 free zone. The free zone is a volume around the proximity switch which shall be kept free from any material capable of affecting the characteristics of the proximity switch.

2.5.1 non-damping material. A non-damping material is a material which has a negligible influence on characteristics of a proximity switch.

2.5.2 embedded in metal proximity switch. A proximity switch is 'embedded in metal' when any metallic piece can be put around, below and up to the sensing face plane, without influencing its characteristics.

2.5.3 not embedded in metal proximity switch. A proximity switch is 'not embedded in metal' if it is necessary to have a free zone around the sensing face in order to maintain its characteristics.

3. Definitions of geometrical characteristics

3.1 operating distance s (see annex). The operating distance is the distance at which the target approaching the sensing face causes the output signal to change.

3.1.1 rated operating distance s_n . The rated operating distance is a conventional quantity used to designate the operating distance. It does not take into account either manufacturing tolerances or variations due to external conditions such as voltage and temperature.

3.1.2 effective operating distance s_r . The effective operating distance is the operating distance of an individual proximity switch, measured at rated temperature and rated voltage.

3.1.3 usable operating distance s_u . The usable operating distance is the operating distance of an individual proximity switch, measured under prescribed conditions of temperature and voltage.

3.1.4 actuation distance s_a . The actuation distance is the distance within which the correct operation of the proximity switch under specified temperature and voltage conditions is assured.

It falls between zero and the lower limit of the usable operating distance.

3.2 lateral approach. The lateral approach is the approach of the target perpendicular to and in the direction of the reference axis of the sensing face of the proximity switch.

3.3 axial approach. The axial approach is the approach of the target with its centre maintained on the reference axis.

3.4 repeat accuracy R . The repeat accuracy is the value of variation of the usable operating distance under specified conditions.

3.5 differential travel H . The differential travel is the distance between the operate point when the target approaches the proximity switch and the release point when the target moves away.

4. Definitions of electrical characteristics

4.1 output function

4.1.1 make output function. A proximity switch having a make output function causes output current to flow when a target is detected and output current not to flow when a target is not detected.

4.1.2 break output function. A proximity switch having a break output function causes output current not to flow when a target is detected and output current to flow when a target is not detected.

4.2 residual voltage U_r . The residual voltage is the voltage measured across a load impedance, when the proximity switch is in the off position.

4.3 voltage drop U_d . The voltage drop is the voltage measured across the proximity switch when the output current flows under specified conditions.

4.4 snap-action. The output of an inductive proximity switch is snap-action if the duration of its output change is substantially independent of the approach or removal speed of the target.

4.5 operating frequency f . Sequence of operations the number of which, during a specified time, is specified.

4.6 time delay before availability t_v . The time delay before availability is the time between the switching on of the supply current and the instant at which the proximity switch becomes ready to operate correctly.

4.7 currents I

4.7.1 short-time withstand current I_k . The short-time withstand current is the maximum current which can flow for a specified duration at a specified operating frequency.

4.7.2 permanent current I_p . The permanent current I_p is the current for which a proximity switch performs correctly permanently.

4.7.3 residual current I_r . The residual current is the current which continues to flow through the load when the proximity switch is in the off position.

5. Classification

Proximity switches are classified according to various distinctive characteristics.

Table 1 shows a designation code resulting from the distinctive characteristics.

5.1 Classification according to the construction form

This is given by a capital letter: A, B, C, D, ...

5.2 Classification according to the installation

Embedded in metal proximity switches (see 2.5.2).

Not embedded in metal proximity switches (see 2.5.3).

5.3 Classification according to type of current

Proximity switches for direct current.

Proximity switches for alternating current.

5.4 Classification according to the number of terminals

Proximity switches for 2 terminals

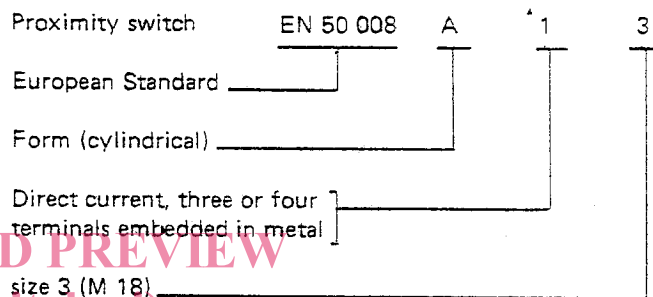
Proximity switches for 3 or 4 terminals.

5.5 Designation code

Table 1. Designation code

Form	1st digit			2nd digit
	Supply voltage	Number of terminals	Installation embedded	Size
A	=	three or four	1	2
.	~	two	3	4
Z	=	two	5	6

Example of designation of an inductive proximity switch:
Direct current, 3 or 4 terminals, form A, embedded in metal, size 3.



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Annex
Diagrammatic representation of operating distances

