



# SLOVENSKI STANDARD

## SIST EN 50010:1998

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### Low-voltage switchgear and controlgear for industrial use - Inductive proximity switches - Methods for measuring the operating distance and operating frequency

Low-voltage switchgear and controlgear for industrial use - Inductive proximity switches - Methods for measuring the operating distance and operating frequency

Industrielle Niederspannungs-Schaltgeräte - Induktive Näherungsschalter - Meßverfahren zur Ermittlung des Schaltabstandes und der Schaltfrequenz

Appareillage industriel à basse tension - Détecteurs de proximité inductifs Méthodes de mesure de la portée et de la fréquence de commutation

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Ta slovenski standard je istoveten z: **EN 50010:1998**

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Key words: low-voltage equipment; inductive proximity switches; measuring method; operating frequency; operating distance

English version

# Low voltage switchgear and controlgear for industrial use. Inductive proximity switches. Methods for measuring the operating distance and operating frequency

Appareillage industriel à basse tension. Détecteurs de proximité inductifs. Méthodes de mesure de la portée et de la fréquence de commutation

Industrielle Niederspannung-Schaltgeräte. Induktive Näherungsschalter. Meßverfahren zur Ermittlung des Schaltabstandes und der Schaltfrequenz

## iTeh STANDARD PREVIEW

This European Standard was ratified by CENELEC on 3 December 1985. CENELEC members are bound to comply with the requirements of the CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration.

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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.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CENELEC member into its own language and notified to the CENELEC General Secretariat has the same status as the official versions.

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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 was prepared by the Technical Committee 17B of CENELEC.

## 1 Scope

This standard applies only to inductive proximity switches.

## 2 Methods for measuring the operating distance

### 2.1 Construction of the target

The target is a square made of mild steel, Fe 360, according to Euronorm 27<sup>1)</sup>, having a thickness of 1 mm. The length  $a$  of the side of the square is equal to: either the diameter of the circle inscribed on the active surface of the sensitive face, or three times the rated operating distances  $s_n$ , whichever is the greater.

### 2.2 Static measurement

As shown in figure 1, the target is moved slowly towards the proximity switch in an axial direction and the operating distance is measured. The appropriate European Standard for the inductive proximity switch will give values of the voltage and temperature.

## 3 Method for measuring the operating frequency $f$

### 3.1 Dynamic measurement

As shown in figure 3, the targets are fixed on the front (method 1) or sides (method 2) of teeth on a rotating disc,

the spaces between the teeth being  $2a$ , in such a manner that they can pass in front of the sensitive face of the proximity switch at a distance equal to half of the rated operating distance  $s_n$ .

Each target shall have the same dimensions as that defined in 2.1.

The output signal of the proximity switches is measured with the speed of rotation of the disc increasing from 0.

An illustration of the output signal of proximity switches is given in figure 2.

With the speed increasing, the durations  $t_1$  and  $t_2$  decrease.

The operating frequency  $f$  is determined from the following formula:

$$f = \frac{1}{t_1 + t_2}$$

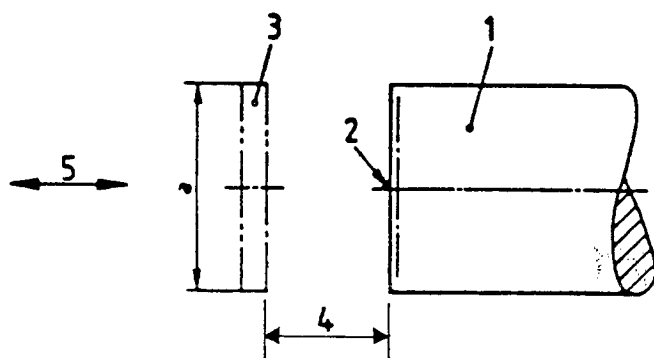
For proximity switches for direct current, the rated value of the operating frequency is obtained when  $t_1$  or  $t_2$  correspond to  $50 \mu\text{s}$ , or when the characteristics of the output signal, in the 'on' or 'off' states, reach the values specified in the particular standard.

For proximity switches for alternating current, the rated value of the operating frequency is obtained when either  $t_1$  or  $t_2$  corresponds to one half-period of the supply frequency ( $f_b$ ).

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#### Legend

1. Proximity switch
2. Sensing face
3. Target
4. Operating distance
5. Direction of motion

Figure 1. Method for measuring the operating distances

1) Each country may indicate its own equivalent symbol.

