



SLOVENSKI STANDARD
SIST EN 50319:2000

01-september-2000

Približevalne naprave - Zahteve za približevalne naprave z analognim izhodom

Proximity devices - Requirements for proximity devices with analogue output

Analoggeber - Anforderungen an Näherungssensoren mit Analogausgang

Détecteurs de proximité - Prescriptions pour les détecteurs de proximité possédant une sortie analogique

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Ta slovenski standard je istoveten z: EN 50319:1999

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ICS:

29.130.20	Nizkonapetostne stikalne in krmilne naprave	Low voltage switchgear and controlgear
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EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

EN 50319

August 1999

ICS 29.130.20

English version

**Proximity devices
Requirements for proximity devices with analogue output**

Détecteurs de proximité
Prescriptions pour les détecteurs de
proximité possédant une sortie
analogique

Analoggeber
Anforderungen an Näherungssensoren
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Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Central 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 Central 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

Central Secretariat: rue de Stassart 35, B - 1050 Brussels

Page 2
EN 50319:1999

Foreword

This European Standard was prepared by the Technical Committee CENELEC TC 17B, Low-voltage switchgear and controlgear including dimensional standardization.

The text of the draft was submitted to the Unique Acceptance Procedure and was approved by CENELEC as EN 50319 on 1999-08-01.

The following dates were fixed:

- latest date by which the EN has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 2000-08-01
- latest date by which the national standards conflicting with the EN have to be withdrawn (dow) 2002-08-01

This European Standard is to be used in conjunction with EN 60947-5-2:1998.

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Introduction

EN 60947-5-2 describes the requirements for proximity switches with semiconductor switching elements. This European Standard modifies the relevant requirements of EN 60947-5-2 to make them applicable to proximity devices with analogue output.

1 General

1.1 Scope and object

This European Standard states the requirements for proximity devices with analogue output. They may consist of one or more parts.

The requirements of EN 60947-5-2 modified according to this standard apply. The clause numbering in this standard follows the clause numbering of EN 60947-5-2.

1.2 Normative references

This European Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the other publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies.

EN 60947-5-2:1998, *Low-voltage switchgear and controlgear -- Part 5-2: Control circuit devices and switching elements -- Proximity switches (IEC 60947-5-2:1997; mod)*

HD 452.1 S1:1984, *Analogue signals for process control systems -- Part 1: Direct current signals (IEC 60381-1:1982)*

1.3 Informative reference

IEC 60381-2:1978, *Analogue signals for process control systems -- Part 2: Direct voltage signals*

IEC 60770-1:1999, *Transmitters for use in industrial-process control systems -- Part 1: Methods for performance evaluation*

2 Definitions

2.1 Basic definitions

2.1.2

proximity device with analogue output

device producing an output signal which varies continuously depending on the distance between the sensing face of the proximity device and its target object

2.1.3

lower distance

minimum stated distance above which the output signal varies continuously

2.1.4

upper distance

maximum stated distance below which the output signal varies continuously

2.1.5

distance range

range of distances between and including the lower and upper distances

2.3.7

distance/output characteristic of the proximity device

relationship of the output signal (current or voltage value) in the steady state to the distance between the sensing face of the proximity device and its target object

2.3.8

conformity

maximum deviation including the manufacturing tolerances between the nominal distance/output characteristic curve and the measured value of five defined distances

2.3.9

repeatability

value of variation of the output signal under specified conditions expressed as a percentage of the upper limit

2.4 Output element characteristics

NOTE – Analogue proximity devices are not necessarily linear devices.

2.4.8

analogue current signal

current signal which varies in a continuous manner within its range

2.4.9

analogue voltage signal

voltage signal which varies in a continuous manner within its range

2.4.10

range of an analogue signal

all values of the signal between and including defined limits

2.4.11

lower limit

specified minimum value of the range

NOTE – The lower limit may be either zero or a finite value; when zero is used, this is called "true zero"; when a finite value is used, this is called "live zero".

2.4.12

upper limit

specified maximum value of the range

2.4.13

load impedance

impedance or impedances for which the output characteristics of the proximity device are specified

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2.4.14**ripple content**

ratio between the peak-to-peak value of the a.c. component and the upper limit of the signal value

2.4.15**recovery time**

time taken, following the removal of an external influence for the output signal to return to its previous value within the limits of repeatability as defined in 2.3.9

3 Classification

According to table 1 of EN 60947-5-2 with the following addition:

3.7 Classification according to analogue output

A proximity device with analogue output shall be designated by a capital A placed in the 5th position. If other outputs also exist, they shall be designated by a second digit according to table 1, fifth position.

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4 Characteristics

According to 4.3 of EN 60947-5-2 with the following additions:

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4.3 Rated and limiting values for the proximity device and output elements

4.3.1 Voltages**4.3.1.5 Range of analogue voltage signals**

The range of analogue voltage signals shall be as given in table 11.

Table 11 – Range of analogue voltage signals

Lower limit	Upper limit
V	V
+ 1	+ 5
0	+ 10

4.3.1.6 Ripple content of the output voltage

The maximum ripple content shall be stated by the manufacturer.

4.3.2 Currents**4.3.2.1 Range of analogue current signals**

The range of analogue current signals shall be as given in table 12.

Table 12 – Range of analogue current signals

Lower limit mA	Upper limit mA
0	20
4	20

4.3.2.2 Ripple content of the output current

The maximum ripple content shall be stated by the manufacturer.

4.3.7 Conformity

The conformity shall be within +/- 10% of the upper limit.

5 Product information

5.1.1 Identification

Subclause 5.1.1 of EN 60947-5-2 applies with the following additions:

- ad) Output type and range (voltage or current)
- ae) Distance range
- af) Ripple content
- ag) Distance/output characteristic
- ah) Recovery time

7 Constructional and performance requirements

7.2.1.4 Repeat accuracy

Subclause 7.2.1.4 of EN 60947-5-2 applies with the following modification.

It shall be measured at the lower distance, at the upper distance and at the median value of the distance range and shall not exceed 5%.

8 Tests

8.4.1.6 Conformity

8.4.1.6.1 Method of measurement

Test conditions shall be in accordance with 8.4.1.1 of EN 60947-5-2.

The test points to determine the performance characteristics of a device shall be equidistant over the distance range. There shall be at least five points.

The output values for each given distance shall be recorded for at least three full distance traverses in each direction of movement of the target.