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Low-voltage switchgear and controlgear - Part 5-7:
Control circuit devices and switching elements -
Proximity devices with analogue output

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

<p>See Eesti standard EVS-EN IEC 60947-5-7:2025 sisaldab Euroopa standardi EN IEC 60947-5-7:2025 ingliskeelset teksti.</p> <p>Standard on jõustunud sellekohase teate avaldamisega EVS Teatajas.</p> <p>Euroopa standardimisorganisatsioonid on teinud Euroopa standardi rahvuslikele liikmetele kättesaadavaks 05.09.2025.</p> <p>Standard on kättesaadav Eesti Standardimis- ja Akrediteerimiskeskusest.</p>	<p>This Estonian standard EVS-EN IEC 60947-5-7:2025 consists of the English text of the European standard EN IEC 60947-5-7:2025.</p> <p>This standard has been endorsed with a notification published in the official bulletin of the Estonian Centre for Standardisation and Accreditation.</p> <p>Date of Availability of the European standard is 05.09.2025.</p> <p>The standard is available from the Estonian Centre for Standardisation and Accreditation.</p>
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Low-voltage switchgear and controlgear - Part 5-7: Control
circuit devices and switching elements - Proximity devices with
analogue output
(IEC 60947-5-7:2024)

Appareillage à basse tension - Partie 5-7: Appareils et
éléments de commutation pour circuits de commande -
DéTECTEURS de proximité à sortie analogique
(IEC 60947-5-7:2024)

Niederspannungsschaltgeräte - Teil 5-7: Steuergeräte und
Schaltelemente - Anforderungen an Näherungssensoren
mit Analogausgang
(IEC 60947-5-7:2024)

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European foreword

The text of document 121A/592/FDIS, future edition 2 of IEC 60947-5-7, prepared by SC 121A "Low-voltage switchgear and controlgear" of IEC/TC 121 "Switchgear and controlgear and their assemblies for low voltage" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN IEC 60947-5-7:2025.

The following dates are fixed:

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In the official version, for Bibliography, the following notes have to be added for the standard indicated:

IEC 60068-2-31	NOTE	Approved as EN 60068-2-31
IEC 61131-2:2017	NOTE	Approved as EN IEC 61131-2:— ¹ (not modified)
IEC 61158 series	NOTE	Approved as EN 61158 series
IEC 61784-1-0	NOTE	Approved as EN IEC 61784-1-0
IEC 61784-2-0	NOTE	Approved as EN IEC 61784-2-0
IEC 61784-5-1	NOTE	Approved as EN 61784-5-1
IEC 61784-2	NOTE	Approved as EN IEC 61784-2
IEC 62683-1:2017	NOTE	Approved as EN 62683-1:2017 (not modified)
IEC 62828-1:2017	NOTE	Approved as EN IEC 62828-1:2018 (not modified)
IEC 62828-4:2020	NOTE	Approved as EN IEC 62828-4:2020 (not modified)
IEC/TR 63201:2019	NOTE	Approved as CLC IEC/TR 63201:2020 (not modified)

¹ Under preparation. Stage at the time of publication: FprEN IEC 61131-2:2017.

INTERNATIONAL STANDARD

NORME INTERNATIONALE



**Low-voltage switchgear and controlgear –
Part 5-7: Control circuit devices and switching elements – Proximity devices
with analogue output**

**Appareillage à basse tension –
Partie 5-7 : Appareils et éléments de commutation pour circuits de commande –
DéTECTEURS DE PROXIMITÉ À SORTIE ANALOGIQUE**



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INTERNATIONAL STANDARD

NORME INTERNATIONALE



**Low-voltage switchgear and controlgear –
Part 5-7: Control circuit devices and switching elements – Proximity devices with
analogue output**

**Appareillage à basse tension –
Partie 5-7 : Appareils et éléments de commutation pour circuits de commande –
DéTECTEURS de proximité à sortie analogique**

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

LOW-VOLTAGE SWITCHGEAR AND CONTROLGEAR –**Part 5-7: Control circuit devices and switching elements –
Proximity devices with analog output**

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IEC 60947-5-7 has been prepared by subcommittee 121A: Low-voltage switchgear and controlgear, of IEC technical committee 121: Switchgear and controlgear and their assemblies for low voltage. It is an International Standard.

This second edition cancels and replaces the first edition published in 2003. This edition constitutes a technical revision.

This edition includes the following significant technical changes with respect to the previous edition:

- a) New structure;
- b) Update and expansion of definitions on analog output properties;
- c) Expanded performance requirements on analog output;

- d) Update and new normative references;
- e) Update of EMC requirements;
- f) Harmonization with IEC 62828 series;
- g) Harmonization with IEC 62683 and IEC 61987 definitions;
- h) Harmonization with IEC 61131-2 requirements;
- i) Update of the Annex A (former Annex G), Example of the determination of the conformity;
- j) New Annex B, Overview tests and influence quantities;
- k) New Annex C, Additional requirements for proximity switches with analog output incorporating a built-in communication interface complying with IEC 61131-9;
- l) New Annex D, Main characteristics for proximity devices with analog output.

This International Standard is to be read in conjunction with IEC 60947-5-2:2019.

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

Draft	Report on voting
121A/592/FDIS	121A/604/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 the parts in the IEC 60947 series, under the general title *Low-voltage switchgear and controlgear*, can be found on the IEC website.

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

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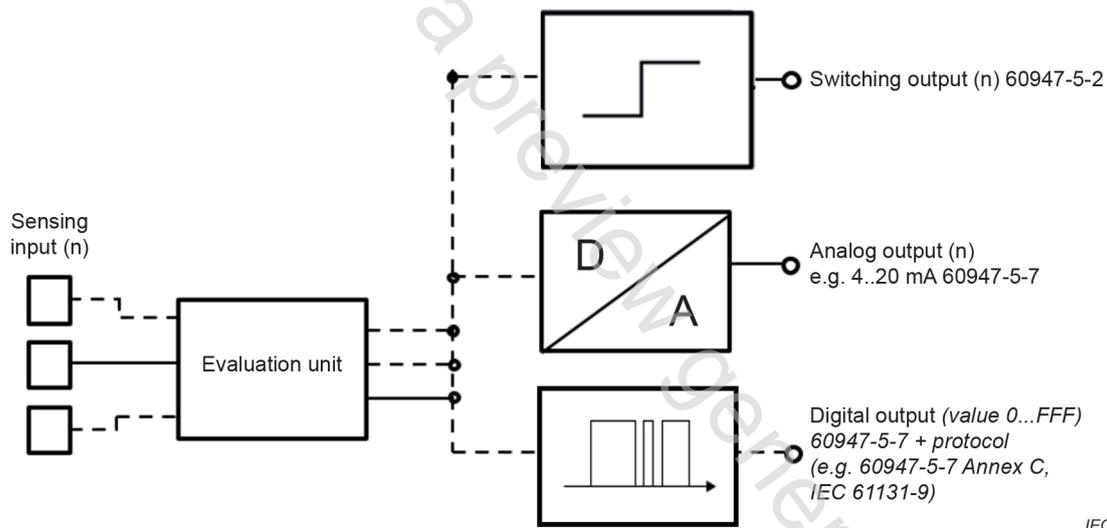
LOW-VOLTAGE SWITCHGEAR AND CONTROLGEAR –

Part 5-7: Control circuit devices and switching elements – Proximity devices with analog output

1 Scope

This part of IEC 60947 states the requirements for proximity devices that correspond to the scope of IEC 60947-5-2:2019 with analog output (PDAO) and/or a digital output to transmit a corresponding digital value representing the detected sensing input. These devices can provide additional parameters. Figure 1 shows the schematic principle of such a device. They might consist of one or more parts.

The requirements of IEC 60947-5-2, *Low-voltage switchgear and controlgear – Part 5-2: Control circuit devices and switching elements – Proximity switches*, apply with the additions and modifications as stated in this document. The clause numbering in this document follows the clause numbering of IEC 60947-5-2, modified where necessary.



IEC

Key

evaluation unit Evaluating electronic circuitry, e.g. MCU, ASIC component...

**Figure 1 – Proximity device with analog output (PDAO),
schematic block diagram structure**

This document does not apply to industrial process measurement transmitters according to IEC 62828 series.

Examples of typical applications for in-scope products:

- factory automation and machinery industry;
- logistic and packaging industry;
- conveyor belts, lifts;
- process industry;
- power plants.

Special applications (e.g. corrosive atmosphere) can cause additional requirements.

Products covered by the scope of this document are expected to be selected, installed, and maintained by skilled personnel only.

NOTE 1 Analog proximity devices can be linear or non linear.

NOTE 2 The specific requirements, characteristics, and test procedures for an analog output interface which are described in Clauses 5, 6 and 9 of this document, are based on requirements written in IEC 61131-2:2017.

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 60947-5-2:2019, *Low-voltage switchgear and controlgear – Part 5-2: Control circuit devices and switching elements – Proximity switches*

IEC 61131-9:2022, *Programmable controllers – Part 9: Single-drop digital communication interface for small sensors and actuators (SDCI)*

IEC 62443 (all parts), *Industrial communication networks – Network and system security*

IEC TS 63208:2020, *Low-voltage switchgear and controlgear – Security aspects*

3 Terms, definitions and list of abbreviated terms

For the purposes of this document, the terms and definitions given in IEC 60947-5-2:2019 and the following apply.

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

- IEC Electropedia: available at <https://www.electropedia.org/>
- ISO Online browsing platform: available at <https://www.iso.org/obp>

3.1 Basic definitions

3.1.1

proximity device with analog output

PDAO

device producing an output signal which varies continuously depending on the physical quantity (e.g. distance, speed, rotation, etc.) detected/calculated by the proximity device in relation to its target object(s)

3.1.2

lower range value

minimum stated input value above which the output signal varies continuously

3.1.3

upper range value

maximum stated input value below which the output signal varies continuously