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

Táto norma obsahuje anglickú verziu európskej normy.
This standard includes the English version of the European Standard.

Táto norma bola oznámená vo Vestníku ÚNMS SR č. 11/25

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EN IEC 60947-5-7

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English Version

**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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EN IEC 60947-5-7:2025 (E)**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:

- latest date by which the document has to be implemented at national (dop) 2026-09-30 level by publication of an identical national standard or by endorsement
- latest date by which the national standards conflicting with the (dow) 2028-09-30 document have to be withdrawn

This document supersedes EN 60947-5-7:2003 and all of its amendments and corrigenda (if any).

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The text of the International Standard IEC 60947-5-7:2024 was approved by CENELEC as a European Standard without any modification.

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.

Annex ZA (normative)

Normative references to international publications with their corresponding European publications

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.

NOTE 1 Where an International Publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

NOTE 2 Up-to-date information on the latest versions of the European Standards listed in this annex is available here: www.cencenelec.eu.

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 60947-5-2	2019	Low-voltage switchgear and controlgear - Part 5-2: Control circuit devices and switching elements - Proximity switches	EN IEC 60947-5-2	2020
-	-		+ A11	2022
IEC 61131-9	2022	Programmable controllers - Part 9: Single-drop digital communication interface for small sensors and actuators (SDCI)	EN IEC 61131-9	2022
IEC 62443-2	series	Security for industrial automation and control systems	EN IEC 62443-2	series
IEC/TS 63208	2020	Low-voltage switchgear and controlgear - Security aspects	-	-



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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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Edition 2.0 2024-04

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**

FOREWORD

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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

- reconfirmed,
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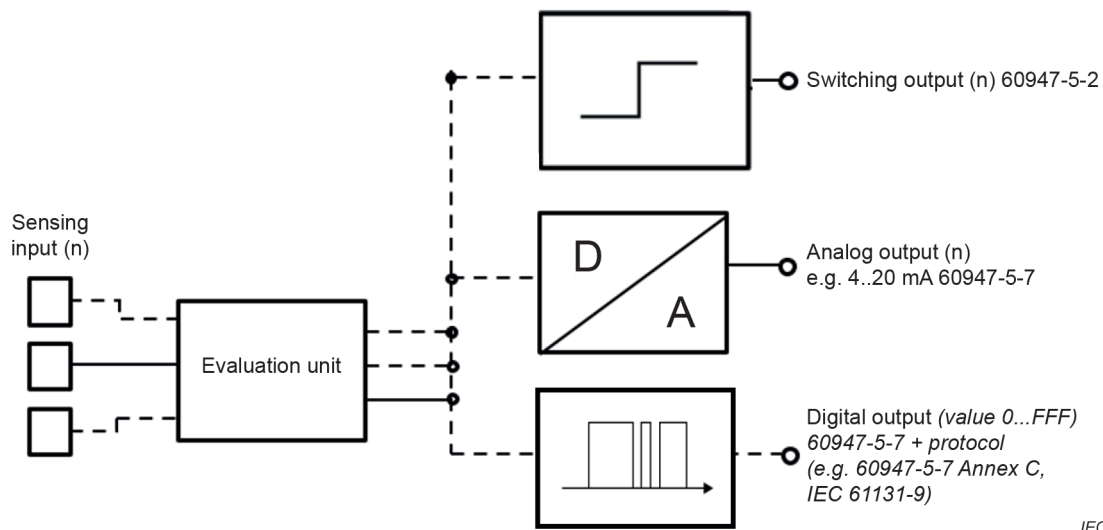
LOW-VOLTAGE SWITCHGEAR AND CONTROLGEAR –

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.



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*

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