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Nizkonapetostne stikalne in krmilne naprave - 5-2. del: Krmilne naprave in stikalni elementi - Približevalna stikala - Dopolnilo A11

Low-voltage switchgear and controlgear - Part 5-2: Control circuit devices and switching elements - Proximity switches

Niederspannungsschaltgeräte - Teil 5-2: Steuergeräte und Schaltelemente - Näherungsschalter

Appareillage à basse tension - Partie 5-2: Appareils et éléments de commutation pour circuits de commande - Détecteurs de proximité

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Ta slovenski standard je istoveten z: **EN IEC 60947-5-2:2020/A11:2022**

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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

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Low-voltage switchgear and controlgear - Part 5-2: Control circuit devices and switching elements - Proximity switches

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Niederspannungsschaltgeräte - Teil 5-2: Steuergeräte und Schaltelemente - Näherungsschalter

This amendment A11 modifies the European Standard EN IEC 60947-5-2:2020; it was approved by CENELEC on 2022-02-28. CENELEC members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this amendment the status of a national standard without any alteration.

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

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Ref. No. EN IEC 60947-5-2:2020/A11:2022 E

SIST EN IEC 60947-5-2:2020/A11:2022

Contents

Page

iTeh STANDARD
PREVIEW
(standards.iteh.ai)

SIST EN IEC 60947-5-2:2020/A11:2022
https://standards.iteh.ai/catalog/standards/sist/a59182e9-83d6-425f-b5a7-7f61b5731fa7/sist-en-iec-60947-5-2-2020-a11-2022

SIST EN IEC 60947-5-2:2020/A11:2022

European foreword

This document (EN IEC 60947-5-2:2020/A11:2022) has been prepared by CLC/TC 121A "Low-voltage switchgear and controlgear".

The following dates are fixed:

• latest date by which this document has to be implemented at national level by publication of an identical national standard or by endorsement	(dop)	2023–02–28
• latest date by which the national standards conflicting with this document have to be withdrawn	(dow)	2025–02–28

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CENELEC shall not be held responsible for identifying any or all such patent rights.

This document is read in conjunction with EN IEC 60947-5-2:2020.

It specifies additional safety and EMC requirements for proximity switches that incorporate radio functionality in a fixed and permanent manner.

This document has been prepared under a Standardization Request given to CENELEC by the European Commission and the European Free Trade Association, and supports essential requirements of EU Directive(s) / Regulation(s).

For relationship with EU Directive(s) / Regulation(s), see informative Annex ZZC, which is an integral part of this document.

Any feedback and questions on this document should be directed to the users' national committee. A complete listing of these bodies can be found on the CENELEC website.

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SIST EN IEC 60947-5-2:2020/A11:2022
2020-a11-2022

SIST EN IEC 60947-5-2:2020/A11:2022

1 Modification to Clause 1, “Scope”

Add the following new paragraph and note at the end of the existing text:

“Annex ZC of this document defines requirements in respect of safety under article 3.1(a) and Electromagnetic Compatibility (EMC) under article 3.1(b) of Directive 2014/53/EU for proximity switches that incorporate one or more radio technologies as set out in ZC.4 in a fixed and permanent manner.

NOTE Requirements applicable to the efficient use of radio spectrum are not included in this document. These requirements can be found in the applicable ETSI product standard(s) for the effective use of the radio spectrum under article 3.2 of Directive 2014/53/EU.”

2 Additions to Clause 2, “Normative references”

Add the following normative references:

“

EN 55032:2015, *Electromagnetic compatibility of multimedia equipment - Emission Requirements*

EN IEC 61000-6-4:2019, *Electromagnetic compatibility (EMC) - Part 6-4: Generic standards - Emission standard for industrial environments*

EN IEC 62311:2020, *Assessment of electronic and electrical equipment related to human exposure restrictions for electromagnetic fields (0 Hz to 300 GHz)*

EN 62479:2010, *Assessment of the compliance of low power electronic and electrical equipment with the basic restrictions related to human exposure to electromagnetic fields (10 MHz to 300 GHz)*

ETSI EN 301-489-3, V2.1.1, *ElectroMagnetic Compatibility (EMC) standard for radio equipment and services; Part 3: Specific conditions for Short-Range Devices (SRD) operating on frequencies between 9 kHz and 246 GHz; Harmonised Standard covering the essential requirements of article 3.1(b) of Directive 2014/53/EU*

ETSI EN 301-489-17, V3.2.4, *ElectroMagnetic Compatibility (EMC) standard for radio equipment and services; Part 17: Specific conditions for Broadband Data Transmission Systems; Harmonised Standard for ElectroMagnetic Compatibility*

ETSI EN 301-489-19, V2.1.1, *ElectroMagnetic Compatibility (EMC) standard for radio equipment and services; Part 19: Specific conditions for Receive Only Mobile Earth Stations (ROMES) operating in the 1,5 GHz band providing data communications and GNSS receivers operating in the RNSS band (ROGNSS) providing positioning, navigation, and timing data; Harmonised Standard covering the essential requirements of article 3.1(b) of Directive 2014/53/EU*

ETSI EN 301-489-33, V2.2.1, *ElectroMagnetic Compatibility (EMC) standard for radio equipment and services; Part 33: Specific conditions for Ultra-WideBand (UWB) devices; Harmonised Standard covering the essential requirements of article 3.1(b) of Directive 2014/53/EU*

“

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SIST EN IEC 60947-5-2:2020/A11:2022

3 Additions to Clause 3, “Terms and Definitions”

Add the following terms and definitions to 3.1:

“

Z.3.1.1
antenna port
port for connection of an antenna used for intentional transmission and/or reception of radiated RF energy

[SOURCE: ETSI EN 303 446-2 (V1.2.1), modified – Note deleted.]

Z.3.1.2
exclusion band
frequency range where during immunity test, the radio functionality is not required to meet the performance criteria defined for the specific test and where the emissions are not assessed

[SOURCE: ETSI EN 303 446-2 (V1.2.1)]

Z.3.1.3
function
operation carried out by an equipment

Note 1 to entry: Functions are related to basic technologies incorporated in the equipment such as radio reception, radio transmission, emitting light, conversion of physical dimensions to electrical signals.

[SOURCE: ETSI EN 303 446-2 (V1.2.1)]

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Z.3.1.4
port
particular interface, of the specified equipment, with the electromagnetic environment

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https://standards.iteh.ai/catalog/standards/sist/a59182e9-83d6-425f-b5a7-7f61b5731fa7/sist-en-iec-60947-5-2-2020-a11-2022

Note 1 to entry: For example, any connection point on an equipment intended for connection of cables to or from that equipment is considered as a port (see Figure ZC.1).

Note 2 to entry: In the case of integral antenna equipment the antenna port is the same as the enclosure port.

[SOURCE: ETSI EN 303 446-2 (V1.2.1), modified – Figure 1 deleted from definition and inserted as Figure ZC.1, Note 1 to entry updated.]

Z.3.1.5
radio equipment
electrical or electronic product, which intentionally emits and/or receives radio waves for the purpose of radio communication and/or radio determination, or an electrical or electronic product which must be completed with an accessory, such as antenna, so as to intentionally emit and/or receive radio waves for the purpose of radio communication and/or radio determination

[SOURCE: Radio Equipment Directive 2014/53/EU, Article 2.1(1)]

Z.3.1.6
wired network port
point of connection for data and signalling transfers intended to interconnect widely dispersed systems by direct connection to a single-user or multi-user communication network (for example LAN and similar networks)

Note 1 to entry: These ports can support screened or unscreened cables and can also carry AC or DC power where this is an integral part of the telecommunication specification.”

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Add the following subclause Z.3.5, "Abbreviations":

"

Z.3.5 Abbreviations

For the purpose of Annex ZC, the abbreviations defined elsewhere in this standard and the following apply:

EMF	electromagnetic fields
EUT	equipment under test
GNSS	global navigation satellite system
LAN	local area network
RF	radio frequency
RNSS	radio-navigation satellite service
ROGNSS	receive only global navigation satellite system
ROMES	receive only mobile earth station
UWB	ultra wide band

"

4 Addition of Annex ZC, "Proximity switches with integrated radio functionality"

Insert the following new Annex ZC:

"

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Annex ZC
(normative)

Proximity switches with integrated radio functionality

SIST EN IEC 60947-5-2:2020/A11:2022
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ZC.1 General

The requirements of the main body of this standard apply unless otherwise stated in this Annex.

This Annex defines additional requirements with respect to safety under article 3.1(a) and Electromagnetic Compatibility (EMC) under article 3.1(b) of Directive 2014/53/EU for proximity switches that incorporate one or more radio technologies as set out in ZC.4 in a fixed and permanent manner.

ZC.2 Additional normative references

The Normative references added to Clause 2 of this document are related specifically to this Annex ZC.

ZC.3 Additional Terms and Definitions

The Terms and Definitions added to Clause 3 of this document are related specifically to this Annex ZC.

ZC.4 Incorporated radio technologies

This annex is applicable if a proximity switch incorporates one or more of the radio technologies set out in Table ZC.1.

SIST EN IEC 60947-5-2:2020/A11:2022

Table ZC.1 — Incorporated radio technologies

Incorporated radio technology	Radio EMC standard	Exclusion band definition
Short range [a]	ETSI EN 301 489–3 (V2.1.1)	Subclause 4.6
Broadband data transmission [b]	ETSI EN 301 489–17 (V3.2.3)	Subclause 4.3
ROMES and ROGNSS [c]	ETSI EN 301 489–19 (V2.1.1)	Subclause 4.3
UWB [d]	ETSI EN 301 489–33 (V2.2.1)	Subclause 4.3
NOTE The subclause number relates to that subclause in the radio EMC standard.		

[a] Short range devices as defined in the scope of ETSI EN 301 489–3 (V2.1.1).

[b] Broadband Data Transmission Systems as defined in the scope of ETSI EN 301 489–17 (V3.2.4) and further pointed out in Annex B of that standard.

[c] ROMES operating in the 1,5 GHz band providing data communications and GNSS receivers operating in the RNSS band (ROGNSS) providing position, navigation and timing data as defined in the scope of ETSI EN 301 489–19 (V2.1.1).

[d] Ultra-Wideband devices as defined in the scope of ETSI EN 301 489–33 (V2.2.1).

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ZC.5 Technical requirements

ZC.5.1 General

ZC.5.2 sets out requirements related to the risk of human exposure to electromagnetic fields.

The requirements specified in 8.2.6 shall be replaced by those defined in ZC.5.3.

NOTE The term “performance requirements” which is used throughout the EN 60947 series of standards is equivalent to the term “technical requirements”.

SIST EN IEC 60947-5-2:2020/A11:2022
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ZC.5.2 Basic restrictions related to human exposure of electromagnetic fields

The radio function shall first be assessed in accordance with the requirements set out in EN 62479:2010 by applying either route B or route C as specified in EN 62479:2010, 4.1. The radio function is deemed to comply with the requirements if the available antenna power and/or the average total radiated power is less than or equal to the applicable low-power exclusion level P_{max} of the ICNIRP Guidelines, as specified in the first 4 rows of EN 62479:2010, Table A.1.

If the proximity switch is exclusively intended to be used in an industrial environment, the limit P_{max} is 200 mW. If P_{max} is between 100 mW and 200 mW then the manufacturer’s documentation shall state that this product shall not be used near to head and trunk.

If the intended use of the proximity switch includes exposure to the general public, the limit P_{max} is 40 mW. If P_{max} is between 20 mW and 40 mW then the manufacturer’s documentation shall state that this product shall not be used near to head and trunk.

If the low-power exclusion level P_{max} is not met when applying route B or route C, the radio function shall be further assessed according to EN IEC 62311:2020, Clause 5.

Information on the intended environment (industrial or general public) and any restrictions shall be provided in addition to the requirements of 6.1.

NOTE A proximity switch without radio functionality is inherently compliant with the exposure limits related to EMF and therefore falls into route A of EN 62479:2010.

SIST EN IEC 60947-5-2:2020/A11:2022

ZC.5.3 Electromagnetic compatibility

ZC.5.3.1 Introduction

The EUT in configuration(s) typical for its intended operating conditions shall be assessed according to the requirements defined in ZC.5.3.4 and ZC.5.3.5. The EUT shall be configured so as to:

— maximize the emissions of the EUT;

— ensure the EUT is most susceptible to the effects of external electromagnetic interference.

For the non-radio function, this configuration shall satisfy the conditions specified in 9.6.1. The radio function shall be configured in accordance with the test conditions specified in Clause 4 of the radio technology specific radio EMC standard(s) set out in Table ZC.1. The configuration(s) used shall be recorded in the test report together with the rationale for these choices.

Where there are alternative test methods and test configurations in this document, those selected shall be detailed in the test report, so that it is possible to use them for re-testing to ensure consistency of the results.

NOTE It can be necessary to perform the assessment in several configurations to cover all intended operating conditions and to ensure that the EUT complies in all configurations.

ZC.5.3.2 Performance criteria

ZC.5.3.2.1 General

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Performance criteria applied during the tests shall be detailed in the test report.

ZC.5.3.2.2 Performance criteria for non-radio functions

The non-radio functions shall comply with the performance criteria defined in Table 9 (acceptance criteria).

ZC.5.3.2.3 Performance criteria for radio functions

SIST EN IEC 60947-5-2:2020/A11:2022
https://standards.iteh.ai/catalog/standards/sist/a59182a9-0f83b0c236f45c7f9f6b57b1a7e/sist-en-iec-60947-5-2-2020-a11-2022

The performance of the radio function(s) shall comply with the performance criteria defined in Clause 6 of the radio technology specific radio EMC standard(s) set out in Table ZC.1.

ZC.5.3.3 Exclusion bands

The exclusion bands defined in Table ZC.1, 3rd column shall be applied, depending on the incorporated radio technology(s).

ZC.5.3.4 Emissions requirements

ZC.5.3.4.1 General

For the non-radio function, the EUT shall be configured in accordance with the requirements specified in 9.6.1.

The radio function shall be in each of the following mode(s) if they can be achieved in intended operation:

— standby;

— receive-only;

— transmit or combined transmit/receive mode.

If emission tests are performed in transmit or combined transmit/receive mode, the exclusion band(s) defined in ZC.5.3.3 shall be applied.

NOTE 1 The transmit mode of the radio function is part of the assessment under article 3.2 of the Directive 2014/53/EU applicable to the radio technology used.