ICS 29.130.20 TECHNICKÁ NORMALIZAČNÁ INFORMÁCIA December 2020

TNI	**Nízkonapäťové spínacie a riadiace zariadenia Posúdenie elektromagnetickej kompatibility pre spínacie a riadiace zariadenia a ich zostavy**	**TNI CLC/IEC TR 63216** 35 4101

Low-voltage switchgear and controlgear - Electromagnetic compatibility assessment for switchgear and controlgear and their assemblies

Táto technická normalizačná informácia obsahuje anglickú verziu CLC/IEC TR 63216:2020, IEC/TR 63216:2019.
This Technical standard information includes the English version of CLC/IEC TR 63216:2020, IEC/TR 63216:2019.

Táto technická normalizačná informácia bola oznámená vo Vestníku ÚNMS SR č. 11/20

131905

TECHNICAL REPORT

RAPPORT TECHNIQUE

TECHNISCHER BERICHT

CLC/IEC TR 63216

August 2020

ICS 29.130.20

English Version

Low-voltage switchgear and controlgear - Electromagnetic compatibility assessment for switchgear and controlgear and their assemblies (IEC/TR 63216:2019)

Appareillage à basse tension - Evaluation de la compatibilité électromagnétique des appareillages et ensembles d'appareillages à basse tension (IEC/TR 63216:2019)

Niederspannungsschaltgeräte - Bewertung der elektromagnetischen Verträglichkeit von Schaltgeräten und deren Schaltgerätekombinationen (IEC/TR 63216:2019)

This Technical Report was approved by CENELEC on 2020-08-10.

CENELEC members are the national electrotechnical committees of Austria, Belgium, Bulgaria, Croatia, Cyprus, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Poland, Portugal, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

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

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

Ref. No. CLC/IEC TR 63216:2020 E

European foreword

This document (CLC/IEC TR 63216:2020) consists of the text of IEC/TR 63216:2019 prepared by SC 121A "Low-voltage switchgear and controlgear" of IEC/TC 121 "Switchgear and controlgear and their assemblies for low voltage".

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.

Endorsement notice

The text of the International Technical Report IEC/TR 63216:2019 was approved by CENELEC as a European Technical Report without any modification.

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

IEC 60038	NOTE	Harmonized as EN 60038
IEC 60364-5-52	NOTE	Harmonized as HD 60364-5-52
IEC 60947 (series)	NOTE	Harmonized as EN IEC 60947 (series)
IEC 61000 (series)	NOTE	Harmonized as EN 61000 (series)
IEC 61000-2-2	NOTE	Harmonized as EN 61000-2-2
IEC 61000-2-12	NOTE	Harmonized as EN 61000-2-12
IEC 61000-4-9	NOTE	Harmonized as EN 61000-4-9
IEC 61000-4-10	NOTE	Harmonized as EN 61000-4-10
IEC 61000-4-12	NOTE	Harmonized as EN 61000-4-12
IEC 61000-4-14	NOTE	Harmonized as EN 61000-4-14
IEC 61000-4-20	NOTE	Harmonized as EN 61000-4-20
IEC 61000-4-21	NOTE	Harmonized as EN 61000-4-21
IEC 61000-4-27	NOTE	Harmonized as EN 61000-4-27
IEC 61000-4-28	NOTE	Harmonized as EN 61000-4-28
IEC 61000-4-31	NOTE	Harmonized as EN 61000-4-31
IEC 61000-4-34	NOTE	Harmonized as EN 61000-4-34
IEC 61000-4-39	NOTE	Harmonized as EN 61000-4-39
IEC 61000-6-4	NOTE	Harmonized as EN IEC 61000-6-4
IEC 61439 (series)	NOTE	Harmonized as EN IEC 61439 (series)
IEC 61508 (series)	NOTE	Harmonized as EN 61508 (series)

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.cenelec.eu.

Publication	Year	Title	EN/HD	Year
IEC 60050-161	1990	International Electrotechnical Vocabulary. Chapter 161: Electromagnetic compatibility	-	-
+ A1	1997		-	-
+ A2	1998		-	-
+ A3	2014		-	-
+ A4	2014		-	-
+ A5	2015		-	-
+ A6	1990		-	-
+ A7	2017		-	-
+ A8	2018		-	-
IEC 60050-441	-	International Electrotechnical Vocabulary. Switchgear, controlgear and fuses	-	-
IEC 60364-4-44	-	Electrical installations of buildings -- Part 4-44: Protection for safety - Protection against voltage disturbances and electromagnetic disturbances	-	-
IEC 60364-5-53	-	Low-voltage electrical installations -- Part 5-53: Selection and erection of electrical equipment - Protection, isolation, switching, control and monitoring	-	-
IEC 60364-5-54	-	Low-voltage electrical installations - Part 5-54: Selection and erection of electrical equipment - Earthing arrangements and protective conductors	HD 60364-5-54	-
IEC 60947-1	-	Low-voltage switchgear and controlgear - Part 1: General rules	EN 60947-1	-
IEC 61000-2-4	2002	Electromagnetic compatibility (EMC) - Part 2-4: Environment - Compatibility levels in industrial plants for low-frequency conducted disturbances	EN 61000-2-4	2002

CLC/IEC TR 63216:2020 (E)

Publication	Year	Title	EN/HD	Year
IEC 61000-4-2	2008	Electromagnetic compatibility (EMC) - Part 4-2: Testing and measurement techniques - Electrostatic discharge immunity test	EN 61000-4-2	2009
IEC 61000-4-3	-	Electromagnetic compatibility (EMC) - Part 4-3: Testing and measurement techniques - Radiated, radio-frequency, electromagnetic field immunity test	EN 61000-4-3	-
IEC 61000-4-4	-	Electromagnetic compatibility (EMC) - Part 4-4: Testing and measurement techniques - Electrical fast transient/burst immunity test	EN 61000-4-4	-
IEC 61000-4-5	-	Electromagnetic compatibility (EMC) - Part 4-5: Testing and measurement techniques - Surge immunity test	EN 61000-4-5	-
IEC 61000-4-6	-	Electromagnetic compatibility (EMC) - Part 4-6: Testing and measurement techniques - Immunity to conducted disturbances, induced by radio-frequency fields	EN 61000-4-6	-
IEC 61000-4-8	-	Electromagnetic compatibility (EMC) - Part 4-8: Testing and measurement techniques - Power frequency magnetic field immunity test	EN 61000-4-8	-
IEC 61000-4-11	-	Electromagnetic compatibility (EMC) - Part 4-11: Testing and measurement techniques - Voltage dips, short interruptions and voltage variations immunity tests for equipment with input current up to 16 A per phase	EN IEC 61000-4-11	-
IEC 61000-4-13	-	Electromagnetic compatibility (EMC) - Part 4-13: Testing and measurement techniques - Harmonics and interharmonics including mains signalling at a.c. power port, low frequency immunity tests	EN 61000-4-13	-
IEC 61000-4-16	-	Electromagnetic compatibility (EMC) - Part 4-16: Testing and measurement techniques - Test for immunity to conducted, common mode disturbances in the frequency range 0 Hz to 150 kHz	EN 61000-4-16	-
IEC 61000-4-18	-	Electromagnetic compatibility (EMC) - Part 4-18: Testing and measurement techniques - Damped oscillatory wave immunity test	EN IEC 61000-4-18	-
IEC 61000-4-19	-	Electromagnetic compatibility (EMC) - Part 4-19: Testing and measurement techniques - Test for immunity to conducted, differential mode disturbances and signalling in the frequency range 2 kHz to 150 kHz at a.c. power ports	EN 61000-4-19	-
IEC 61000-6-1	-	Electromagnetic compatibility (EMC) - Part 6-1: Generic standards - Immunity standard for residential, commercial and light-industrial environments	EN IEC 61000-6-1	-

Publication	Year	Title	EN/HD	Year
IEC 61000-6-2	-	Electromagnetic compatibility (EMC) - Part 6-2: Generic standards - Immunity standard for industrial environments	EN IEC 61000-6-2	-
IEC 61000-6-3	-	Electromagnetic compatibility (EMC) - Part 6-3: Generic standards - Emission standard for residential, commercial and light-industrial environments	EN 61000-6-3	-
IEC 61000-6-5	-	Electromagnetic compatibility (EMC) - Part 6-5: Generic standards - Immunity for equipment used in power station and substation environment	EN 61000-6-5	-
IEC 61000-6-7	-	Electromagnetic compatibility (EMC) - Part 6-7: Generic standards - Immunity requirements for equipment intended to perform functions in a safety-related system (functional safety) in industrial locations	EN 61000-6-7	-
IEC 61131-2	-	Industrial-process measurement and control – Programmable controllers – Part 2: Equipment requirements and tests	EN 61131-2	-
IEC 61439-1	2011	Low-voltage switchgear and controlgear assemblies - Part 1: General rules	EN 61439-1	2011
IEC 61800-3	-	Adjustable speed electrical power drive systems - Part 3: EMC requirements and specific test methods	EN IEC 61800-3	-
IEC Guide 107	-	Electromagnetic compatibility - Guide to the drafting of electromagnetic compatibility publications	-	-
CISPR 11 (mod)	2015	Industrial, scientific and medical equipment - Radio-frequency disturbance characteristics - Limits and methods of measurement	EN 55011	2016
+ A1	2016		+ A1	2017
+ A2	2019		-	-
-	-		+ A11	2020
CISPR 32	-	Electromagnetic compatibility of multimedia equipment - Emission requirements	EN 55032	-
		Voltage characteristics of electricity supplied by public electricity networks	EN 50160	-

IEC TR 63216

Edition 1.0 2019-10

TECHNICAL REPORT

colour inside

Low-voltage switchgear and controlgear – Electromagnetic compatibility assessment for switchgear and controlgear and their assemblies

IEC TR 63216:2019-10(en)

IEC Central Office
3, rue de Varembé
CH-1211 Geneva 20
Switzerland

Tel.: +41 22 919 02 11
info@iec.ch
www.iec.ch

About the IEC
The International Electrotechnical Commission (IEC) is the leading global organization that prepares and publishes International Standards for all electrical, electronic and related technologies.

About IEC publications
The technical content of IEC publications is kept under constant review by the IEC. Please make sure that you have the latest edition, a corrigendum or an amendment might have been published.

IEC publications search - webstore.iec.ch/advsearchform
The advanced search enables to find IEC publications by a variety of criteria (reference number, text, technical committee,…). It also gives information on projects, replaced and withdrawn publications.

IEC Just Published - webstore.iec.ch/justpublished
Stay up to date on all new IEC publications. Just Published details all new publications released. Available online and once a month by email.

IEC Customer Service Centre - webstore.iec.ch/csc
If you wish to give us your feedback on this publication or need further assistance, please contact the Customer Service Centre: sales@iec.ch.

Electropedia - www.electropedia.org
The world's leading online dictionary on electrotechnology, containing more than 22 000 terminological entries in English and French, with equivalent terms in 16 additional languages. Also known as the International Electrotechnical Vocabulary (IEV) online.

IEC Glossary - std.iec.ch/glossary
67 000 electrotechnical terminology entries in English and French extracted from the Terms and Definitions clause of IEC publications issued since 2002. Some entries have been collected from earlier publications of IEC TC 37, 77, 86 and CISPR.

IEC TR 63216

Edition 1.0 2019-10

TECHNICAL REPORT

Low-voltage switchgear and controlgear – Electromagnetic compatibility assessment for switchgear and controlgear and their assemblies

INTERNATIONAL
ELECTROTECHNICAL
COMMISSION

ICS 29.130.20 ISBN 978-2-8322-7542-9

CONTENTS

INTERNATIONAL ELECTROTECHNICAL COMMISSION

_____

LOW-VOLTAGE SWITCHGEAR AND CONTROLGEAR –

Electromagnetic compatibility assessment for switchgear and controlgear and their assemblies

FOREWORD

1) The International Electrotechnical Commission (IEC) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of IEC is to promote international co-operation on all questions concerning standardization in the electrical and electronic fields. To this end and in addition to other activities, IEC publishes International Standards, Technical Specifications, Technical Reports, Publicly Available Specifications (PAS) and Guides (hereafter referred to as “IEC Publication(s)”). Their preparation is entrusted to technical committees; any IEC National Committee interested in the subject dealt with may participate in this preparatory work. International, governmental and non-governmental organizations liaising with the IEC also participate in this preparation. IEC collaborates closely with the International Organization for Standardization (ISO) in accordance with conditions determined by agreement between the two organizations.
2) The formal decisions or agreements of IEC on technical matters express, as nearly as possible, an international consensus of opinion on the relevant subjects since each technical committee has representation from all interested IEC National Committees.
3) IEC Publications have the form of recommendations for international use and are accepted by IEC National Committees in that sense. While all reasonable efforts are made to ensure that the technical content of IEC Publications is accurate, IEC cannot be held responsible for the way in which they are used or for any misinterpretation by any end user.
4) In order to promote international uniformity, IEC National Committees undertake to apply IEC Publications transparently to the maximum extent possible in their national and regional publications. Any divergence between any IEC Publication and the corresponding national or regional publication shall be clearly indicated in the latter.
5) IEC itself does not provide any attestation of conformity. Independent certification bodies provide conformity assessment services and, in some areas, access to IEC marks of conformity. IEC is not responsible for any services carried out by independent certification bodies.
6) All users should ensure that they have the latest edition of this publication.
7) No liability shall attach to IEC or its directors, employees, servants or agents including individual experts and members of its technical committees and IEC National Committees for any personal injury, property damage or other damage of any nature whatsoever, whether direct or indirect, or for costs (including legal fees) and expenses arising out of the publication, use of, or reliance upon, this IEC Publication or any other IEC Publications.
8) Attention is drawn to the Normative references cited in this publication. Use of the referenced publications is indispensable for the correct application of this publication.
9) Attention is drawn to the possibility that some of the elements of this IEC Publication may be the subject of patent rights. IEC shall not be held responsible for identifying any or all such patent rights.

The main task of IEC technical committees is to prepare International Standards. However, a technical committee may propose the publication of a technical report when it has collected data of a different kind from that which is normally published as an International Standard, for example "state of the art".

IEC TR 63216, which is a technical report, 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.

The text of this technical report is based on the following documents:

Enquiry draft	Report on voting
121A/292/DTR	121A/306A/RVDTR

Full information on the voting for the approval of this technical report can be found in the report on voting indicated in the above table.

This document has been drafted in accordance with the ISO/IEC Directives, Part 2.

The committee has decided that the contents of this document will remain unchanged until the stability date indicated on the IEC website under "http://webstore.iec.ch" in the data related to the specific document. At this date, the document will be

- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
- amended.

A bilingual version of this publication may be issued at a later date.

IMPORTANT – The 'colour inside' logo on the cover page of this publication indicates that it contains colours which are considered to be useful for the correct understanding of its contents. Users should therefore print this document using a colour printer.

INTRODUCTION

Low-voltage switchgear and controlgear and their assemblies (hereinafter referred to as "equipment") compliant with their standards, when installed and used in accordance with manufacturer's instructions, operate safely and reliably with a good level of immunity and do not produce interferences in normal operation or reasonably foreseeable faulty conditions.

This document is intended to support discussions within IEC TC 121 and its sub-committees, and with other TCs/SCs, by explaining electromagnetic compatibility assessment of equipment and compatibility measures contained in the IEC 60947 series of standards.

Those measures are based on a system approach, depending on the EMC environment in industrial applications. They include design rules and type tests to ensure the compatibility of equipment to the intended electromagnetic environment.

The collection of IEC 61000 series is very large and very generic. The intent of this document is to provide the essential applicable EMC concepts for IEC TC 121 and its sub-committees' working groups, maintenance teams and project teams.

For this intent, this document defines specific descriptions of the relevant EMC environments which are derived from the generic ones of IEC 61000 series. In addition, these environments are consistent with the zones defined by IEC 61131-2.

LOW-VOLTAGE SWITCHGEAR AND CONTROLGEAR –

Electromagnetic compatibility assessment for switchgear and controlgear and their assemblies

1 Scope

The purpose of this document is to define homogeneous categories for the electromagnetic environments in order to harmonize as far as practicable all general rules and product standard requirements of electromagnetic compatibility (EMC), applicable to low-voltage switchgear, controlgear and their assemblies with built-in electronic circuits.

This document also addresses incorporated radiocommunication functions.

The typical application environments for such equipment include the electrical distribution in infrastructure, commercial and industrial buildings and the control systems of machinery, including motor-driven systems.

The primary intention of EMC requirements is to ensure the safe and reliable operation of the equipment, as well as the communication efficiency of the radiocommunication equipment within their intended environments.

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 60050-161:1990, *International Electrotechnical Vocabulary (IEV) – Part 161: Electromagnetic compatibility*
IEC 60050-161:1990/AMD1:1997
IEC 60050-161:1990/AMD2:1998
IEC 60050-161:1990/AMD3:2014
IEC 60050-161:1990/AMD4:2014
IEC 60050-161:1990/AMD5:2015
IEC 60050-161:1990/AMD6:2016
IEC 60050-161:1990/AMD7:2017
IEC 60050-161:1990/AMD8:2018

IEC 60050-441, *International Electrotechnical Vocabulary (IEV) – Part 441: Switchgear, controlgear and fuses*

IEC 60364-4-44, *Low-voltage electrical installations – Part 4-44: Protection for safety – Protection against voltage disturbances and electromagnetic disturbances*

IEC 60364-5-53, *Low-voltage electrical installations – Part 5-53: Selection and erection of electrical equipment – Devices for protection for safety, isolation, switching, control and monitoring*

IEC 60364-5-54, *Low-voltage electrical installations – Part 5-54: Selection and erection of electrical equipment – Earthing arrangements and protective conductors*

IEC 60947-1*, Low-voltage switchgear and controlgear – Part 1: General rules*

IEC 61000-2-4:2002, *Electromagnetic compatibility (EMC) – Part 2-4: Environment – Compatibility levels in industrial plants for low-frequency conducted disturbances*

IEC 61000-4-2:2008, *Electromagnetic compatibility (EMC) – Part 4-2: Testing and measurement techniques – Electrostatic discharge immunity test*

IEC 61000-4-3, *Electromagnetic compatibility (EMC) – Part 4-3: Testing and measurement techniques – Radiated, radio-frequency, electromagnetic field immunity test*

IEC 61000-4-4, *Electromagnetic compatibility (EMC) – Part 4-4: Testing and measurement techniques – Electrical fast transient/burst immunity test*

IEC 61000-4-5, *Electromagnetic compatibility (EMC) – Part 4-5: Testing and measurement techniques – Surge immunity test*

IEC 61000-4-6, *Electromagnetic compatibility (EMC) – Part 4-6: Testing and measurement techniques – Immunity to conducted disturbances, induced by radio-frequency fields*

IEC 61000-4-8, *Electromagnetic compatibility (EMC) – Part 4-8: Testing and measurement techniques – Power frequency magnetic field immunity test*

IEC 61000-4-11, *Electromagnetic compatibility (EMC) – Part 4-11: Testing and measurement techniques – Voltage dips, short interruptions and voltage variations immunity tests*

IEC 61000-4-13, *Electromagnetic compatibility (EMC) – Part 4-13: Testing and measurement techniques – Harmonics and interharmonics including mains signalling at a.c. power port, low frequency immunity tests*

IEC 61000-4-16, *Electromagnetic compatibility (EMC) – Part 4-16: Testing and measurement techniques – Test for immunity to conducted, common mode disturbances in the frequency range 0 Hz to 150 kHz*

IEC 61000-4-18, *Electromagnetic compatibility (EMC) – Part 4-18: Testing and measurement techniques – Damped oscillatory wave immunity test*

IEC 61000-4-19, *Electromagnetic compatibility (EMC) – Part 4-19: Testing and measurement techniques – Test for immunity to conducted, differential mode disturbances and signalling in the frequency range 2 kHz to 150 kHz at a.c. power ports*

IEC 61000-6-1, *Electromagnetic compatibility (EMC) – Part 6-1: Generic standards – Immunity standard for residential, commercial and light-industrial environments*

IEC 61000-6-2, *Electromagnetic compatibility (EMC) – Part 6-2: Generic standards – Immunity standard for industrial environments*

IEC 61000-6-3, *Electromagnetic compatibility (EMC) – Part 6-3: Generic standards – Emission standard for residential, commercial and light-industrial environments*

IEC 61000-6-5, *Electromagnetic compatibility (EMC) – Part 6-5: Generic standards – Immunity for equipment used in power station and substation environment*

IEC 61000-6-7, *Electromagnetic compatibility (EMC) – Part 6-7: Generic standards – Immunity requirements for equipment intended to perform functions in a safety-related system (functional safety) in industrial locations*

IEC 61131-2, *Industrial-process measurement and control – Programmable controllers – Part 2: Equipment requirements and tests*

IEC 61439-1:2011, *Low-voltage switchgear and controlgear assemblies – Part 1: General rules*

IEC 61800-3, *Adjustable speed electrical power drive systems – Part 3: EMC requirements and specific test methods*

IEC Guide 107, *Electromagnetic compatibility – Guide to the drafting of electromagnetic compatibility publications*

CISPR 11:2015, *Industrial, scientific and medical equipment – Radio-frequency disturbance characteristics – Limits and methods of measurement*
CISPR 11:2015/AMD1:2016
CISPR 11:2015/AMD2:2019

CISPR 32, *Electromagnetic compatibility of multimedia equipment – Emission requirements*

EN 50160, *Voltage characteristics of electricity supplied by public electricity networks*