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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 - Évaluation 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.

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## 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".

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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](http://www.cenelec.eu).

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
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

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
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	-

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
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	-

# TECHNICAL REPORT



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



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# TECHNICAL REPORT



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

INTERNATIONAL  
ELECTROTECHNICAL  
COMMISSION

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## CONTENTS

FOREWORD.....	4
INTRODUCTION.....	6
1 Scope.....	7
2 Normative references .....	7
3 Terms and definitions .....	9
4 Classification of the electromagnetic environments.....	11
4.1 General.....	11
4.2 Emission classification.....	11
4.3 Environments.....	12
4.4 Low voltage supply .....	14
4.4.1 Nominal voltages .....	14
4.4.2 Faults in power supply networks .....	14
4.4.3 Nominal frequencies .....	14
4.4.4 Electromagnetic disturbances in power supply networks .....	15
4.5 EMC environment classification .....	15
4.6 Principle of compatibility .....	16
5 Drafting of EMC requirements.....	16
5.1 General.....	16
5.2 EMC assessment.....	17
5.3 Drafting of EMC requirements in product and assembly standards .....	17
6 Radiocommunication .....	18
6.1 General.....	18
6.2 Radiated emissions.....	18
6.3 Conducted emissions.....	18
6.4 Immunity.....	18
6.4.1 General .....	18
6.4.2 Radiated immunity .....	19
6.4.3 Radio frequency (common mode) .....	19
6.5 Typical radiocommunication standards.....	19
7 EMC related information .....	19
7.1 Information on the product environment .....	19
7.2 Information related to emission limits .....	19
7.3 Instruction for use .....	20
7.4 Good wiring practices .....	20
8 Test levels of switchgear and controlgear .....	20
8.1 Emission limits and test methods .....	20
8.2 Immunity test levels .....	21
8.3 Type tests.....	23
Annex A (informative) Rationale of the electromagnetic compatibility based on the electric network topology .....	24
A.1 General.....	24
A.2 Overvoltage levels in the installation .....	24
Annex B (informative) Electromagnetic phenomena .....	25
B.1 EMC phenomena .....	25
B.1.1 General .....	25
B.1.2 Voltage dips and short interruptions.....	25

B.1.3	Overvoltages .....	25
B.1.4	Sine wave disturbances .....	26
B.1.5	Three-phase system disturbances .....	26
B.1.6	Electromagnetic disturbances .....	26
B.1.7	Electromagnetic fields (EMF) .....	27
B.1.8	Transient .....	27
B.1.9	Radiated modulated disturbances .....	27
B.1.10	Radio frequency identification (RFID) systems .....	27
B.1.11	Radiated pulsed disturbances .....	28
B.1.12	Electrostatic discharge .....	28
B.2	Relation between testing standards and basic phenomena .....	28
Bibliography	.....	31
Figure 1	– Ports of entry of electromagnetic disturbances into equipment .....	11
Figure 2	– Example of EMC environments .....	13
Figure 3	– Principle of EMC compatibility .....	16
Figure 4	– CISPR 11:2015, Class A limits (quasi peak) for conducted and radiated emission at 10 m.....	21
Table 1	– Typical environment levels .....	15
Table 2	– Minimum immunity test levels .....	21
Table A.1	– Relation between surge coupling and overvoltage category .....	24
Table B.1	– Testing standards covering basic phenomena .....	29

## INTERNATIONAL ELECTROTECHNICAL COMMISSION

**LOW-VOLTAGE SWITCHGEAR AND CONTROLGEAR –****Electromagnetic compatibility assessment  
for switchgear and controlgear and their assemblies**

## FOREWORD

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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.

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## 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.