

Electrical equipment for measurement, control and laboratory use - EMC requirements - Part 3-1: Immunity requirements for safety-related systems and for equipment intended to perform safety-related functions (functional safety) - General industrial applications

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

See Eesti standard EVS-EN 61326-3-1:2017 sisaldab Euroopa standardi EN 61326-3-1:2017 ingliskeelset teksti.	This Estonian standard EVS-EN 61326-3-1:2017 consists of the English text of the European standard EN 61326-3-1:2017.
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English Version

Electrical equipment for measurement, control and laboratory use - EMC requirements - Part 3-1: Immunity requirements for safety-related systems and for equipment intended to perform safety-related functions (functional safety) - General industrial applications
(IEC 61326-3-1:2017)

Matériel électrique de mesure, de commande et de laboratoire - Exigences relatives à la CEM - Partie 3-1: Exigences d'immunité pour les systèmes relatifs à la sécurité et pour les matériels destinés à réaliser des fonctions relatives à la sécurité (sécurité fonctionnelle) - Applications industrielles générales
(IEC 61326-3-1:2017)

Elektrische Mess-, Steuer-, Regel- und Laborgeräte - EMV-Anforderungen - Teil 3-1: Störfestigkeitsanforderungen für sicherheitsbezogene Systeme und für Geräte, die für sicherheitsbezogene Funktionen vorgesehen sind (Funktionale Sicherheit) - Allgemeine industrielle Anwendungen
(IEC 61326-3-1:2017)

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European foreword

The text of document 65A/819/FDIS, future edition 2 of IEC 61326-3-1, prepared by SC 65A "System aspects", of IEC/TC 65 "Industrial-process measurement, control and automation" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN 61326-3-1:2017.

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- latest date by which the document has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 2018-03-20
- latest date by which the national standards conflicting with the document have to be withdrawn (dow) 2020-06-20

This document supersedes EN 61326-3-1:2008.

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The text of the International Standard IEC 61326-3-1:2017 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 standards indicated:

IEC 60204-1:2005	NOTE	Harmonized as EN 60204-1:2006.
IEC 61000 (series)	NOTE	Harmonized as EN 61000 (series).
IEC 61000-1-2:2005	NOTE	Harmonized as EN 60204-1:2006.
IEC 61000-6-5	NOTE	Harmonized as EN 61000-6-5.
IEC 61000-6-7	NOTE	Harmonized as EN 61000-6-7.
IEC 61326-2-1:2012	NOTE	Harmonized as EN 61326-2-1:2013.
IEC 61326-2-2:2012	NOTE	Harmonized as EN 61326-2-2:2013.
IEC 61326-2-3:2012	NOTE	Harmonized as EN 61326-2-3:2013.
IEC 61326-2-4:2012	NOTE	Harmonized as EN 61326-2-4:2013.
IEC 61326-2-5:2012	NOTE	Harmonized as EN 61326-2-5:2013.
IEC 61326-3-1:2008	NOTE	Harmonized as EN 61326-3-1:2008.
IEC 61508 (series)	NOTE	Harmonized as EN 61508 (series).

IEC 61508-1:2010	NOTE	Harmonized as EN 61508-1:2010.
IEC 61508-4:2010	NOTE	Harmonized as EN 61508-4:2010.
IEC 61511 (series)	NOTE	Harmonized as EN 61511 (series).
IEC 61784-3	NOTE	Harmonized as EN 61784-3.

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Annex ZA (normative)

Normative references to international publications with their corresponding European publications

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

NOTE 1 When 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.

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 60050-161	-	International Electrotechnical Vocabulary- (IEV) -- Chapter 161: Electromagnetic compatibility		-
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	2006	Electromagnetic compatibility (EMC) -- Part 4-3: Testing and measurement techniques - Radiated, radio-frequency, electromagnetic field immunity test	EN 61000-4-3	2006
+ A1	2007		+ A1	2008
+ A2	2010		+ A2	2010
IEC 61000-4-4	2012	Electromagnetic compatibility (EMC) -- Part 4-4: Testing and measurement techniques - Electrical fast transient/burst immunity test	EN 61000-4-4	2012
IEC 61000-4-5	2014	Electromagnetic compatibility (EMC) - Part 4-5: Testing and measurement techniques - Surge immunity test	EN 61000-4-5	2014
IEC 61000-4-6	2013	Electromagnetic compatibility (EMC) -- Part 4-6: Testing and measurement techniques - Immunity to conducted disturbances, induced by radio-frequency fields	EN 61000-4-6	2014
IEC 61000-4-8	2009	Electromagnetic compatibility (EMC) -- Part 4-8: Testing and measurement techniques - Power frequency magnetic field immunity test	EN 61000-4-8	2010
IEC 61000-4-11	2004	Electromagnetic compatibility (EMC) -- Part 4-11: Testing and measurement techniques - Voltage dips, short interruptions and voltage variations immunity tests	EN 61000-4-11	2004
IEC 61000-4-16	2015	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	2016

IEC 61000-4-29	2000	Electromagnetic compatibility (EMC) -- Part 4-29: Testing and measurement techniques - Voltage dips, short interruptions and voltage variations on d.c. input power port immunity tests	EN 61000-4-29	2000
IEC 61000-4-34	2005	Electromagnetic compatibility (EMC) -- Part 4-34: Testing and measurement techniques - Voltage dips, short interruptions and voltage variations immunity tests for equipment with input current more than 16 A per phase	EN 61000-4-34	2007
+ A1	2009		+ A1	2009
IEC 61000-6-2	2016	Electromagnetic compatibility (EMC) - Part 6-2: Generic standards - Immunity standard for industrial environments	EN 61000-6-2	2017
IEC 61326-1	2012	Electrical equipment for measurement, control and laboratory use - EMC requirements -- Part 1: General requirements	EN 61326-1	2013
IEC 61326-3-2	-		-	-
IEC 61508-2	2010	Functional safety of electrical/electronic/programmable electronic safety-related systems -- Part 2: Requirements for electrical/electronic/programmable electronic safety-related systems	EN 61508-2	2010

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INTRODUCTION

Functional safety is that part of the overall safety relating to the equipment under control (EUC) and the EUC control system which depends on the correct functioning of the electrical safety-related systems. To achieve this, all items of equipment of the safety-related system which are involved in the performance of the safety functions must behave in a specified manner under all relevant conditions.

The IEC basic safety publication for functional safety of electrical/electronic/programmable electronic safety-related systems is IEC 61508. It sets the overall requirements to achieve functional safety. Sufficient immunity to electromagnetic disturbances is one of those requirements.

The concept of IEC 61508 distinguishes between the consideration of the application and the design of safety-related electrical and electronic systems. The overall safety requirements specification specifies all relevant requirements of the intended application, as follows:

- a) definition of the safety functions, based on a risk assessment of the intended application (which functions are intended to reduce risk);
- b) appropriate safety integrity level (SIL) for each safety-function based on a risk assessment of the intended application;
- c) definition of the environment in which the system is intended to work including the electromagnetic environment as required by IEC 61508-2.

The requirements for each safety function are then specified in one or more system safety requirements specifications (SSRS). Hence, with regard to immunity against electromagnetic phenomena, the essential starting point is that the electromagnetic environment and its phenomena are considered in the SSRS, as required by IEC 61508. The safety-related system intended to implement the specified safety function has to fulfil the SSRS, and, from it, corresponding immunity requirements have to be derived for the items of equipment, which results in an equipment requirement specification. With respect to the electromagnetic environment, the SSRS and the equipment requirement specification should be based on a competent assessment of the foreseeable electromagnetic threats in the real environment over the whole operational life of the equipment. Hence, immunity requirements for the equipment depend on the characteristics of the electromagnetic environment in which the equipment is intended to be used.

The equipment manufacturer, therefore, has to prove that the equipment fulfils the equipment requirement specification and the system integrator must prove that the system fulfils the SSRS. Evidence has to be produced by application of appropriate methods. They do not need to consider any other aspects of the application, for example, risk of the application associated to any failure of the safety-related system. The objective is for all equipment in the system to comply with particular performance criteria taking into account functional safety aspects (for example, the performance criterion DS) up to levels specified in the SSRS independent of the required safety integrity level (SIL).

For approaches on how to apply IEC 61326-3 series, see Annex A.

There exists meanwhile the generic EMC standard IEC 61000-6-7 dealing with functional safety aspects in industrial environments. Generic EMC standards are designed to apply for a defined electromagnetic environment, to products for which no dedicated product family EMC/product EMC standards exist. However, for the equipment in the scope of this document, the information given in the generic EMC standard was considered not to be sufficient. More detailed information and specifications were needed, for example specific test set-ups, consideration of the functional earth port or the deliberate differentiation between types of electromagnetic environments relevant for the equipment in the scope of this document.

Though historically this product standard was developed several years before the generic EMC standard, this 2nd edition considers the information given in the generic EMC standard and applies it where appropriate.

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