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## Elektrisk utrustning för mätning, styrning och för laboratorieändamål – EMC-fordringar – Del 1: Allmänna fordringar

*Electrical equipment for measurement, control and laboratory use –  
EMC requirements –  
Part 1: General requirements*

Som svensk standard gäller europastandarden EN IEC 61326-1:2021. Den svenska standarden innehåller den officiella engelska språkversionen av EN IEC 61326-1:2021.

### Nationellt förord

Europastandarden EN IEC 61326-1:2021

består av:

- **europastandardens ikraftsättningsdokument**, utarbetat inom CENELEC
- **IEC 61326-1, Third edition, 2020 - Electrical equipment for measurement, control and laboratory use - EMC requirements - Part 1: General requirements**

utarbetad inom International Electrotechnical Commission, IEC.

Tidigare fastställd svensk standard SS-EN 61326-1, utgåva 3, 2013, gäller ej fr o m 2024-06-04.

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ICS 33.100.20; 25.040.40; 17.220.20

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EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

**EN IEC 61326-1**

June 2021

ICS 25.040.40; 17.220.20; 33.100.20

Supersedes EN 61326-1:2013 and all of its amendments  
and corrigenda (if any)

English Version

**Electrical equipment for measurement, control and laboratory  
use - EMC requirements - Part 1: General requirements  
(IEC 61326-1:2020)**

Matériel électrique de mesure, de commande et de  
laboratoire - Exigences relatives à la CEM - Partie 1:  
Exigences générales  
(IEC 61326-1:2020)

Elektrische Mess-, Steuer-, Regel- und Laborgeräte - EMV-  
Anforderungen - Teil 1: Allgemeine Anforderungen  
(IEC 61326-1:2020)

This European Standard was approved by CENELEC on 2020-11-30. CENELEC members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration.

Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the CEN-CENELEC Management Centre or to any CENELEC member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CENELEC member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

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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 61326-1:2021 E

SEK Svensk Elstandard

SS-EN IEC 61326-1, utg 4:2021

## **European foreword**

The text of document 65A/975/FDIS, future edition 3 of IEC 61326-1, 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 IEC 61326-1:2021.

The following dates are fixed:

- latest date by which the document has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 2021-12-04
- latest date by which the national standards conflicting with the document have to be withdrawn (dow) 2024-06-04

This document supersedes EN 61326-1:2013 and all of its amendments and corrigenda (if any).

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This document has been prepared under a mandate given to CENELEC by the European Commission and the European Free Trade Association.

### **Endorsement notice**

The text of the International Standard IEC 61326-1:2020 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 60359            | NOTE | Harmonized as EN 60359                             |
| IEC 61000-6-1:2016   | NOTE | Harmonized as EN IEC 61000-6-1:2019 (not modified) |
| IEC 61000-6-2:2016   | NOTE | Harmonized as EN IEC 61000-6-2:2019 (not modified) |
| IEC 61010 (series)   | NOTE | Harmonized as EN IEC 61010 (series)                |
| IEC 61326-2 (series) | NOTE | Harmonized as EN 61326-2 (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.<br>Chapter 161: Electromagnetic compatibility   | -                 | -           |
| + A1               | 1997        |  | -                 | -           |
| + A2               | 1998        |  | -                 | -           |
| + A3               | 2014        |  | -                 | -           |
| + A4               | 2014        |  | -                 | -           |
| + A5               | 2015        |  | -                 | -           |
| + A6               | 2016        |  | -                 | -           |
| + A7               | 2017        |  | -                 | -           |
| + A8               | 2018        |  | -                 | -           |
| IEC 61000-3-2      | 2018        | Electromagnetic compatibility (EMC) – Part<br>3-2: Limits – Limits for harmonic current<br>emissions (equipment input current $\leq 16$ A<br>per phase)  | EN IEC 61000-3-2  | 2019        |
| IEC 61000-3-3      | 2013        | Electromagnetic compatibility (EMC) - Part<br>3-3: Limits - Limitation of voltage changes,<br>voltage fluctuations and flicker in public<br>low-voltage supply systems, for equipment<br>with rated current $\leq 16$ A per phase and not<br>subject to conditional connection | EN 61000-3-3      | 2013        |
| + A1               | 2017        |  | + A1              | 2019        |
| IEC 61000-3-11     | 2017        | Electromagnetic compatibility (EMC) – Part<br>3-11: Limits – Limitation of voltage<br>changes, voltage fluctuations and flicker in<br>public low-voltage supply systems –<br>Equipment with rated current $\leq 75$ A and<br>subject to conditional connection                 | EN IEC 61000-3-11 | 2019        |

## EN IEC 61326-1:2021 (E)

| <u>Publication</u> | <u>Year</u> | <u>Title</u>  | <u>EN/HD</u>      | <u>Year</u> |
|--------------------|-------------|---|-------------------|-------------|
| IEC 61000-3-12     | 2011        | Electromagnetic compatibility (EMC) - Part 3-12: Limits - Limits for harmonic currents produced by equipment connected to public low-voltage systems with input current >16 A and ≤75 A per phase                   | EN 61000-3-12     | 2011        |
| 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        |
| + A1               | 2017        |   | + A1              | 2017        |
| 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     | 2020        | 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 | 2020        |
| 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        |
| -                  | -           |   | + A11             | 2020        |
| + A2               | 2019        |   | + A2              | 2021        |



IEC 61326-1

Edition 3.0 2020-10

# INTERNATIONAL STANDARD

# NORME INTERNATIONALE

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**Electrical equipment for measurement, control and laboratory use –  
EMC requirements –  
Part 1: General requirements**

**Matériel électrique de mesure, de commande et de laboratoire –  
Exigences relatives à la CEM –  
Partie 1: Exigences générales**

INTERNATIONAL  
ELECTROTECHNICAL  
COMMISSION

COMMISSION  
ELECTROTECHNIQUE  
INTERNATIONALE

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ICS 17.220.20; 25.040.40; 33.100.20

ISBN 978-2-8322-8947-1

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# INTERNATIONAL ELECTROTECHNICAL COMMISSION

## **ELECTRICAL EQUIPMENT FOR MEASUREMENT, CONTROL AND LABORATORY USE – EMC REQUIREMENTS –**

### **Part 1: General requirements**

#### **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.
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International Standard IEC 61326-1 has been prepared by subcommittee 65A: System aspects, of IEC technical committee 65: Industrial-process measurement, control and automation.

This third edition cancels and replaces the second edition, published in 2012. This edition constitutes a technical revision.

This edition includes the following significant technical changes with respect to the previous edition:

- the immunity test levels and performance criteria have been reviewed;
- requirements for portable test and measurement equipment have been clarified and amended;

- the description of the electromagnetic environments has been improved.

The text of this International Standard is based on the following documents:

| FDIS         | Report on voting |
|--------------|------------------|
| 65A/975/FDIS | 65A/985/RVD      |

Full information on the voting for the approval of this International Standard 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.

In this document, the following print types are used:

- Terms used throughout this document which have been defined in Clause 3: SMALL CAPITALS

A list of all parts of the IEC 61326 series under the general title *Electrical equipment for measurement, control and laboratory use – EMC requirements*, 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 "<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.

## INTRODUCTION

Instruments and equipment within the scope of this document may often be geographically widespread and hence operate under a wide range of environmental conditions.

The limitation of undesired electromagnetic emissions ensures that no other equipment installed nearby is unduly influenced by the equipment under consideration. The limits are more or less specified by, and therefore taken from, IEC and International Special Committee on Radio Interference (CISPR) publications.

However, the equipment should function without undue degradation in an electromagnetic environment typical for the locations where it is intended to be operated. In this respect, the document specifies three different types of electromagnetic environment and the levels for immunity. More detailed information about issues related to electromagnetic environments are given in IEC TR 61000-2-5. Special risks, involving for example nearby or direct lightning strikes, circuit-breaking, or exceptionally high electromagnetic radiation in close proximity, are not covered.

Complex electric and/or electronic systems should require EMC planning in all phases of their design and installation, taking into consideration the electromagnetic environment, any special requirements, and the severity of failures.

This part of IEC 61326 specifies the EMC requirements that are generally applicable to all equipment within its scope. For certain types of equipment, these requirements will be supplemented or modified by the special requirements of one, or more than one, particular part IEC 61326-2 (all parts). These should be read in conjunction with the IEC 61326-1 requirements.

# ELECTRICAL EQUIPMENT FOR MEASUREMENT, CONTROL AND LABORATORY USE – EMC REQUIREMENTS –

## Part 1: General requirements

### 1 Scope

This part of IEC 61326 specifies requirements for immunity and emissions regarding electromagnetic compatibility (EMC) for electrical equipment, operating from a supply or battery of less than 1 000 V AC or 1 500 V DC or from the circuit being measured. Equipment intended for professional, industrial-process, industrial-manufacturing and educational use is covered by this part. It includes equipment and computing devices for

- measurement and test;
- control;
- LABORATORY use;
- accessories intended for use with the above (such as sample handling equipment),

intended to be used in industrial and non-industrial locations.

Computing devices and assemblies and similar equipment within the scope of information technology equipment (ITE) and complying with applicable ITE EMC standards can be used in systems within the scope of this part of IEC 61326 without additional testing, if they are suitable for the intended electromagnetic environment.

It is generally considered that this product family standard takes precedence over the corresponding generic EMC standards.

The following equipment is covered by this document.

#### a) Electrical measurement and test equipment

This is equipment which, by electrical means, measures, indicates or records one or more electrical or non-electrical quantities, also non-measuring equipment such as signal generators, measurement standards, power supplies and transducers.

#### b) Electrical control equipment

This is equipment which controls one or more output quantities to specific values, with each value determined by manual settings, by local or remote programming, or by one or more input variables. This includes industrial process measurement and control (IPMC) equipment, which consists of devices such as:

- process controllers and regulators;
- programmable controllers;
- power supply units for equipment and systems (centralized or dedicated);
- analogue/digital indicators and recorders;
- process instrumentation;
- transducers, positioners, intelligent actuators, etc.

#### c) Electrical LABORATORY equipment, including In Vitro Diagnostic (IVD) medical equipment

This is equipment used to prepare or analyse materials, or measure, indicate or monitor physical quantities. This equipment might also be used in areas other than laboratories.

- d) Equipment a), b) or c) as above when being equipped with components having radio functionality, for example for wireless communication.

Equipment within the scope of this document might be operated in different electromagnetic environments; depending on the electromagnetic environment different emission and immunity test requirements are applicable.

This document considers three types of electromagnetic environments:

- BASIC ELECTROMAGNETIC ENVIRONMENT;
- INDUSTRIAL ELECTROMAGNETIC ENVIRONMENT;
- CONTROLLED ELECTROMAGNETIC ENVIRONMENT.

Corresponding immunity test requirements are described in Clause 6.

In terms of emission requirements, equipment shall be classified in Class A or Class B equipment, as per the requirements and procedure of CISPR 11. The corresponding emission requirements are described in Clause 7.

The specified emission and immunity requirements aim at achieving electromagnetic compatibility between equipment covered in this document and other equipment that might operate at locations with electromagnetic environments considered in this document. Guidance for an assessment concerning the risk for achieving EMC is given in Annex B.

## 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  
(available at <<http://www.electropedia.org>>)

IEC 61000-3-2:2018, *Electromagnetic compatibility (EMC) – Part 3-2: Limits – Limits for harmonic current emissions (equipment input current ≤16 A per phase)*

IEC 61000-3-3:2013, *Electromagnetic compatibility (EMC) – Part 3-3: Limits – Limitation of voltage changes, voltage fluctuations and flicker in public low-voltage supply systems, for equipment with rated current ≤16 A per phase and not subject to conditional connection*  
IEC 61000-3-3:2013/AMD1:2017

IEC 61000-3-11:2017, *Electromagnetic compatibility (EMC) – Part 3-11: Limits – Limitation of voltage changes, voltage fluctuations and flicker in public low-voltage supply systems – Equipment with rated current ≤75 A and subject to conditional connection*

IEC 61000-3-12:2011, *Electromagnetic compatibility (EMC) – Part 3-12: Limits – Limits for harmonic currents produced by equipment connected to public low-voltage systems with input current >16 A and ≤75 A per phase*

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

IEC 61000-4-3:2006, *Electromagnetic compatibility (EMC) – Part 4-3: Testing and measurement techniques – Radiated, radio-frequency, electromagnetic field immunity test*

IEC 61000-4-3:2006/AMD1:2007

IEC 61000-4-3:2006/AMD2:2010

IEC 61000-4-4:2012, *Electromagnetic compatibility (EMC) – Part 4-4: Testing and measurement techniques – Electrical fast transient/burst immunity test*

IEC 61000-4-5:2014, *Electromagnetic compatibility (EMC) – Part 4-5: Testing and measurement techniques – Surge immunity test*

IEC 61000-4-5:2014/AMD1:2017

IEC 61000-4-6:2013, *Electromagnetic compatibility (EMC) – Part 4-6: Testing and measurement techniques – Immunity to conducted disturbances, induced by radio-frequency fields*

IEC 61000-4-8:2009, *Electromagnetic compatibility (EMC) – Part 4-8: Testing and measurement techniques – Power frequency magnetic field immunity test*

IEC 61000-4-11:2020, *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*

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