



IEC 61000-3-3

Edition 3.2 2021-03
CONSOLIDATED VERSION

INTERNATIONAL STANDARD



**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**

INTERNATIONAL
ELECTROTECHNICAL
COMMISSION

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REDLINE VERSION



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INTERNATIONAL ELECTROTECHNICAL COMMISSION

IEC 61000-3-3
Edition 3.0 2013-05
Amendment 2 2021-03

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

INTERPRETATION SHEET 1

This interpretation sheet has been prepared by subcommittee 77A: EMC – Low frequency phenomena, of IEC technical committee 77: Electromagnetic compatibility.

The text of this interpretation sheet is based on the following documents:

DISH	Report on voting
77A/1238/DISH	77A/1244A/RVDISH

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

Interpretation of the term “rated input current” for the applicability of the standards IEC 61000-3-3 and IEC 61000-3-11.

Introduction:

An incorrect use case of the standard was reported in SC77A/WG2, that was caused by a misunderstanding of the words “rated current” used in the Scope clauses of IEC 61000-3-3 and IEC 61000-3-11.

The standard IEC 61000-3-11 is considered to be applicable to a product that can operate continuously with an input current over 16 A, whatever term is applied to this current. The words “rated current for xxx” in this case are used for the input current when the products (heat pump systems) are tested and measured according to ISO 5151. For example, the current measured under the test of ISO 5151 for cooling is mentioned as “rated current for cooling: 13,89 A” on the name plate. Another value according to ISO 5151 has been specified as “rated current for heating: 10,34 A”. Also, the maximum input current where the product can operate continuously is mentioned as “Max. input current: 19 A” on the same nameplate.

A picture of the name plate:

		Cooling		Heating	
防触电保护类别	I 类	制冷时	制热时		
电源 (三相交流)	380V 3N~ 50Hz	额定能力	25000	27300	W
制冷剂	R410A 7.3 kg	室外机组额定输入功率	8690	6400	W
净质量	140 kg	室外机组额定电流	13.89	10.34	A
最高工作压力(高压/排气侧)	4.15 MPa	室外机组噪声	58	61	dB(A)
(低压/吸气侧)	2.30 MPa	室外机组总最大电流	19.00		A
热交换器最大工作压力	4.15 MPa	室外机组总最大输入功率		11880	W
保护等级	IPX4	APF	4.81		

IEC

This led to confusion, whether IEC 61000-3-3 or IEC 61000-3-11 is applicable for the evaluation of voltage changes, voltage fluctuations and flicker produced by this equipment.

After a thorough discussion together with 77A/WG1, 77A/WG2 concluded to answer this question as given below.

Question:

When in the technical documentation to a product more than one input current is specified, how to decide, whether IEC 61000-3-3 or IEC 61000-3-11 shall be applied?

Answer:

If the largest input current specified for the equipment that can flow continuously exceeds 16 A, IEC 61000-3-11 applies and not IEC 61000-3-3.

NOTE Typically, values for the input current are specified on the nameplate and in the instruction manual.

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

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**

FOREWORD

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- 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.
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- 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.
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IEC 61000-3-3 edition 3.2 contains the third edition (2013-05) [documents 77A/809/FDIS and 77A/816/RVD], its amendment 1 (2017-05) [documents 77A/952/FDIS and 77A/960/RVD] and its amendment 2 (2021-03) [documents 77A/1075/CDV and 77A/1093/RVC], its corrigendum (2022-01) and the Interpretation sheet 1 (2025-04) (applying to the English version only).

This Final version does not show where the technical content is modified by amendments 1 and 2. A separate Redline version with all changes highlighted is available in this publication.

International Standard IEC 61000-3-3 has been prepared by subcommittee 77A: EMC – Low frequency phenomena, of IEC technical committee 77: Electromagnetic compatibility.

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- a) This edition takes account of the changes made in IEC 61000-4-15:2010.

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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

IEC 61000 is published in separate parts according to the following structure:

Part 1: General

General considerations (introduction, fundamental principles)

Definitions, terminology

Part 2: Environment

Description of the environment

Classification of the environment

Compatibility levels

Part 3: Limits

Emission limits

Immunity limits (in so far as they do not fall under the responsibility of product committees)

Part 4: Testing and measurement techniques

Measurement techniques

Testing techniques

Part 5: Installation and mitigation guidelines

Installation guidelines

Mitigation methods and devices

Part 9: Miscellaneous

Each part is further subdivided into sections which are to be published either as International Standards or as Technical Reports.

These standards and reports will be published in chronological order and numbered accordingly.

INTRODUCTION to the corrigendum

During the final editing of the text for IEC 61000-3-3:2013/AMD2:2021 (Edition 3), a mistake occurred and the sentence “Plt shall not be evaluated” is not displayed as a separate paragraph. As a result, this could lead to a wrong interpretation of the text and to wrong Pass/Fail results. This corrigendum is needed to clarify that the text “Plt shall not be evaluated” applies to all equipment in Clause A.16.

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

1 Scope

This part of IEC 61000 is concerned with the limitation of voltage fluctuations and flicker impressed on the public low-voltage system.

It specifies limits of voltage changes which may be produced by an equipment tested under specified conditions and gives guidance on methods of assessment.

This part of IEC 61000 is applicable to electrical and electronic equipment having an input current equal to or less than 16 A per phase, intended to be connected to public low-voltage distribution systems of between 220 V and 250 V line to neutral at 50 Hz, and not subject to conditional connection.

Equipment which does not comply with the limits of this part of IEC 61000 when tested with the reference impedance Z_{ref} of 6.4, and which therefore cannot be declared compliant with this part, may be retested or evaluated to show conformity with IEC 61000-3-11. Part 3-11 is applicable to equipment with rated input current ≤ 75 A per phase and subject to conditional connection.

The tests according to this part are type tests. Particular test conditions are given in Annex A and the test circuit is shown in Figure 1.

NOTE 1 The limits in this standard relate to the voltage changes experienced by consumers connected at the interface between the public supply low-voltage network and the equipment user's installation. Consequently, if the actual impedance of the supply at the supply terminals of equipment connected within the equipment user's installation exceeds the test impedance, it is possible that supply disturbance exceeding the limits could occur.

NOTE 2 The limits in this standard are based mainly on the subjective severity of flicker imposed on the light from 230 V 60 W coiled-coil filament lamps by fluctuations of the supply voltage. For systems with nominal voltage less than 220 V line to neutral and/or frequency of 60 Hz, the limits and reference circuit values are under consideration.

2 Normative references

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.

IEC/TR 60725, *Consideration of reference impedances and public supply impedances for use in determining disturbance characteristics of electrical equipment having a rated current ≤ 75 A per phase*

IEC 60974-1, *Arc welding equipment – Part 1: Welding power sources*

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

IEC 61000-3-11, *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 61000-4-15:2010, *Electromagnetic compatibility (EMC) – Part 4-15: Testing and measurement techniques – Flickermeter – Functional and design specifications*

FINAL VERSION

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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

1 Scope

This part of IEC 61000 is concerned with the limitation of voltage fluctuations and flicker impressed on the public low-voltage system.

It specifies limits of voltage changes which may be produced by an equipment tested under specified conditions and gives guidance on methods of assessment.

This part of IEC 61000 is applicable to electrical and electronic equipment having an input current equal to or less than 16 A per phase, intended to be connected to public low-voltage distribution systems of between 220 V and 250 V line to neutral at 50 Hz, and not subject to conditional connection.

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The tests according to this part are type tests. Particular test conditions are given in Annex A and the test circuit is shown in Figure 1.

NOTE 1 The limits in this standard relate to the voltage changes experienced by consumers connected at the interface between the public supply low-voltage network and the equipment user's installation. Consequently, if the actual impedance of the supply at the supply terminals of equipment connected within the equipment user's installation exceeds the test impedance, it is possible that supply disturbance exceeding the limits could occur.

NOTE 2 The limits in this standard are based mainly on the subjective severity of flicker imposed on the light from 230 V 60 W coiled-coil filament lamps by fluctuations of the supply voltage. For systems with nominal voltage less than 220 V line to neutral and/or frequency of 60 Hz, the limits and reference circuit values are under consideration.

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