AS/NZS IEC 63129:2021
IEC 63129:2020

STANDARDS NEW ZEALAND
TE MANA TAUTĪKANGA O AOTEAROA

STANDARDS Australia

Australian/New Zealand Standard™

Determination of inrush current characteristics of lighting products

AS/NZS IEC 63129:2021

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The following are represented on Committee EL-041:

Australian Industry Group
Better Regulation Division (Fair Trading, Safework NSW, TestSafe)
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Consumers Federation of Australia
Department of Industry, Science, Energy and Resources
Electrical Compliance Testing Association of Australia
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Determination of inrush current characteristics of lighting products

First published as AS/NZS IEC 63129:2021.

Preface

This Standard was prepared by the Joint Standards Australia/Standards New Zealand Committee EL-041, Lamps and Related Equipment.

The objective of this document is to describe a method, based on measurements combined with calculations, to determine specific characteristics of the inrush current of single and/or multiple lighting products of the same type. Lighting products include the following:

(a) Light sources with integrated controlgear.

(b) Controlgear.

(c) Luminaires.

The inrush current characteristics that are determined are the following:

(i) The peak inrush current.

(ii) The inrush current pulse duration.

This document applies to lighting products connected to low-voltage 230 V AC 50/60 Hz electrical supply networks.

The 230V AC specified in this document relates to the nominal voltage of the electrical supply network not the rating marked on the lighting products.

This document is identical with, and has been reproduced from, IEC 63129:2020, *Determination of inrush current characteristics of lighting products.*

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

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FOREWORD

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International Standard IEC 63129 has been prepared by IEC technical committee 34: Lamps and related equipment.

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

CDV	Report on voting
34/636/CDV	34/679/RVC

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.

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.

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INTRODUCTION

Inrush current is the transient current drawn by an electrical device after it is switched on via an independent mains switch, the maximum amplitude of which is often much higher than in steady state during normal operation. Inrush current occurs because of charging capacitances during power up of a device.

Quantities such as peak inrush current and inrush current pulse duration are key parameters to characterize the inrush current, which are important to consider when selecting the switchgear of a lighting installation. This information is indispensable for electric installation planners, lighting designers and installers to be able to guarantee compatibility of a lighting system with other installation components like switches and overcurrent protection devices.

Careful selection of overcurrent protection devices, like circuit breakers, is important when dealing with high inrush currents. The overcurrent protection should react quickly to overload or short circuit but should not interrupt the circuit when an inrush current flows (i.e. false tripping). Another unwanted adverse effect that could occur when inrush current is not considered is welding of contacts of mechanical or electromechanical switches (manual or automatic).

The aim of this document is to determine the peak inrush current and the inrush current pulse duration of one or multiple lighting products of the same type.

This can serve as valuable information for installers in making the correct selection of components like switches and overcurrent protection devices in an installation or conversely for determination of the maximum number of lighting products of the same type that can be applied in an installation with switches and overcurrent protection devices (see Annex A).

The resulting functional compatibility between switchgear and lighting products in an installation is the main rationale for this document.

The rated voltage of lighting products which can be tested with this document is limited to 230 V AC only. Future inclusion of other voltages (for example 100 V AC, 120 V AC, 200 V AC, 277 V AC, 347 V AC) is not excluded.

DETERMINATION OF INRUSH CURRENT CHARACTERISTICS OF LIGHTING PRODUCTS

1 Scope

This document describes a method, based on measurements combined with calculations, to determine specific characteristics of the inrush current of single and/or multiple lighting products of the same type. Lighting products include the following:

- light sources with integrated controlgear,
- controlgear,
- luminaires.

The inrush current characteristics that are determined are

- the peak inrush current,
- the inrush current pulse duration.

This document applies to lighting products connected to low-voltage 230 V AC 50/60 Hz electrical supply networks.

NOTE In Clause 6 it is stated that the methodology applies reference values for the reference (line) inductance and the reference (short circuit) peak current which reflect the typical situation in a 230 V AC installation.

2 Normative references

There are no normative references in this document.

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- IEC Electropedia: available at http://www.electropedia.org/
- ISO Online browsing platform: available at http://www.iso.org/obp

3.1
bidirectional diode thyristor
DIAC
two-terminal thyristor having substantially the same switching behaviour in the first and third quadrants of the current-voltage characteristic

[SOURCE: IEC 60050-521:2002, 521-04-66]

3.2
bidirectional triode thyristor
TRIAC
three-terminal thyristor having substantially the same switching behaviour in the first and third quadrants of the current-voltage characteristic

[SOURCE: IEC 60050-521:2002, 521-04-67]