AS/NZS 60929:2000
IEC 60929:1990

Australian/New Zealand Standard™

Auxiliaries for lamps—A.C. supplied electronic ballasts for tubular fluorescent lamps—Performance requirements

Standards Australia

STANDARDS NEW ZEALAND

This Joint Australian/New Zealand Standard was prepared by Joint Technical Committee EL/41, Lamps and Related Equipment. It was approved on behalf of the Council of Standards Australia on 3 July 2000 and on behalf of the Council of Standards New Zealand on 10 August 2000. It was published on 21 August 2000.

The following interests are represented on Committee EL/41:

Association of Consulting Engineers, Australia
Australian Chamber of Commerce and Industry
Australian Electrical and Electronic Manufacturers Association
Electrical Compliance Testing Association of Australia
Electrical Regulatory Authorities Council
Energy Efficiency and Conservation Authority of New Zealand
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We also welcome suggestions for improvement in our Standards, and especially encourage readers to notify us immediately of any apparent inaccuracies or ambiguities. Please address your comments to the Chief Executive of either Standards Australia International or Standards New Zealand at the address shown on the back cover.

This Standard was issued in draft form for comment as DR 99297.

Australian/New Zealand Standard™

Auxiliaries for lamps—A.C. supplied electronic ballasts for tubular fluorescent lamps—Performance requirements

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PREFACE

This Standard was prepared by the Joint Standards Australia/Standards New Zealand Committee, EL/41**,** Lamps and Related Equipment to supersede (in Australia) AS 3963—1991, *a.c. supplied electronic ballasts for tubular fluorescent lamps—Performance requirements*.

The objective of this Standard is to provide the lighting industry with performance requirements for electronic ballasts for tubular fluorescent lamps for use on a.c. supplies up to 1000 V at 50 Hz or 60 Hz with operating frequencies deviating from the supply frequency.

This Standard is identical with, and has been reproduced from, IEC 60929:1990, *A.C. supplied ballasts for tubular fluorescent lamps—Performance requirements*, including Corrigendum:1991, Amendment 1:1994, and Amendment 2:1994. Reproduction was done by scanning the IEC texts and integrating the changes. The effects of the corrigendum are not marked; the clauses changed by Amendments 1 and 2 are indicated by single and double marginal bars respectively.

In January 1997, the IEC commenced numbering its Standards from 60000 by adding 60000 to the number of each existing Standard. This coordinates IEC numbering with ISO numbering. During the transition period an IEC Standard might be identified by its new number or its old number (for example, IEC 60050 or IEC 50).

A reference to an International Standard identified in the Normative References Clause by strike-through (~~example~~) is replaced by a reference to the Australian or Australian/New Zealand Standard(s) listed immediately thereafter and identified by shading (example). Where the struck-through referenced document and the referenced Australian or Australian/New Zealand Standard are identical, this is indicated in parenthesis after the title of the latter.

As this Standard is reproduced from an International Standard, the following applies:

(a) Its number does not appear on each page of text and its identity is shown only on the cover and title page.

(b) In the source text ‘this International Standard’ should read ‘this Australian/New Zealand Standard’.

(c) A full point should be substituted for a comma when referring to a decimal marker.

In this Standard, the following print types are used:

(i) Requirements proper: in arial type.

(ii) *Test specifications: in italic type.*

(iii) Notes: in smaller arial type.

The terms ‘normative’ and ‘informative’ have been used in this Standard to define the application of the annex to which they apply. A ‘normative’ annex is an integral part of a Standard, whereas an ‘informative’ annex is only for information and guidance.

Attention is drawn to Electromagnetic Compatibility (EMC) schemes introduced in their respective countries by the Australian Communications Authority (ACA) and the Ministry of Commerce New Zealand (MOC) to manage the use and performance of devices that either intentionally or unintentionally emit electromagnetic energy in the radiofrequency spectrum. Mandated Standards form an integral part of the EMC compliance schemes. Electrical lighting products fall within the scope of AS/NZS 4051, *Limits and methods of measurement of radio disturbance characteristics of electrical lighting and similar equipment*. AS/NZS 4051 has been reproduced from IEC/CISPR 15 (same title) but contains some changes to limits to protect local radio services.

Information on EMC compliance for lighting equipment is to be found on the internet for Australia at http://www.aca.gov.au/standards/emcindex.htm and for NZ at http://www.moc.govt.nz/rsm

CONTENTS

INTRODUCTION

This standard covers performance requirements for electronic ballasts for use on a.c. supplies up to 1 000 V at 50 Hz or 60 Hz with operating frequencies deviating from the supply frequency, associated with tubular fluorescent lamps as specified in IEC 81 and 901, and other tubular fluorescent lamps for high frequency operation, still to be standardized.

These ballasts are intended to operate lamps at various frequencies including high frequencies, and at various lamp powers. Attention is drawn to the fact that operating frequencies below 20 kHz may cause audio noise disturbance, whereas frequencies above 50 kHz may increase radio interference problems.

Some lamps may be specifically designed for high frequency operation on high-frequency ballasts. Two starting modes, preheat and non-preheat, are described.

NOTE - The possibility exists for operation of lamps designed for preheat starting on circuits of the non preheat type. Lamps specified for operation on both types of circuits may appear in IEC 81 or lamp manufacturers will have to authorize such operation of their lamps.

In order to obtain satisfactory performance of fluorescent lamps and electronic ballasts, it is necessary that certain features of their design be properly coordinated. It is essential, therefore, that specifications for them be written in terms of measurement made against some common baseline of reference, which must be reasonable, permanent and reproducible.

These conditions may be fulfilled by reference ballasts. Moreover, the testing of ballasts for fluorescent lamps will, in general, be made with reference lamps and, in particular, by comparing results obtained on such lamps with ballasts to be tested and with a reference ballast.

Whereas the reference ballast for frequencies of 50 Hz or 60 Hz is a self-inductive coil, the high-frequency reference ballast is a resistor because of its independency of frequency and the lack of influence of parasitic capacitance.

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1 Scope

This International Standard specifies performance requirements for electronic ballasts for use on a.c. supplies up to 1 000 V at 50 Hz or 60 Hz with operating frequencies deviating from the supply frequency, associated with tubular fluorescent lamps as specified in IEC 81 and 901 and other tubular fluorescent lamps for high frequency operation.

NOTE – Tests in this standard are type tests. Requirements for testing individual ballasts during production are not included.

2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this International Standard. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this International Standard are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

References to International Standards that are struck through in this Clause are replaced by references to equivalent Australian or Australian/New Zealand Standards that are listed immediately thereafter and identified by shading. Any Australian or Australian/New Zealand Standard that is identical to the International Standard it replaces is appropriately identified.

~~IEC 81:1984, *Tubular fluorescent lamps for general lighting service (Amendment No. 1:1987*, Amendment No. 2:1988)~~

AS 1201—1989, *Tubular fluorescent lamps for general lighting service*

IEC 410:1973, *Sampling plans and procedures for inspection by attributes*

~~IEC 555-2:1982, *Disturbances in supply systems caused by household appliances and similar electrical equipment Part 2: Harmonics* (Amendment No. 2: 1988)~~ (superseded by IEC 61000.3.2)

~~IEC 61000.3.2, *Electromagnetic compatibility (EMC), Part 3: Limits—Section 2: Limits for harmonic current emissions (equipment input current ≤16 A per phase)*~~

AS/NZS 61000.3.2*, Electromagnetic compatibility (EMC)*, Part 1: *Limits—Limits for harmonic current emissions (equipment input current less than or equal to 16 A per phase)*

IEC 901: 1987, Single-capped fluorescent lamps - Safety and performance requirements