IEC/PAS 62815-2

Edition 1.0 2013-10

PUBLICLY AVAILABLE SPECIFICATION

PRE-STANDARD

Cold cathode fluorescent lamps –
Part 2: Performance specifications

IEC Central Office
3, rue de Varembé
CH-1211 Geneva 20
Switzerland

Tel.: +41 22 919 02 11
Fax: +41 22 919 03 00
info@iec.ch
www.iec.ch

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

PRICE CODE P

ICS 29.140.99

ISBN 978-2-8322-1125-0

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

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FOREWORD

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IEC/PAS 62815-2 has been processed by subcommittee 34A: Lamps, of IEC technical committee 34: Lamps and related equipment.

The text of this PAS is based on the following document:	This PAS was approved for publication by the P-members of the committee concerned as indicated in the following document
Draft PAS	**Report on voting**
34A/1596/PAS	34A/1615/RVD

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COLD CATHODE FLUORESCENT LAMPS –

Part 2: Performance specifications

1 Scope

This part of IEC/PAS 62815 specifies the performance requirements for tubular type cold cathode fluorescent lamps for backlight unit purposes used to flat panel displays such as TV and monitor etc., hereafter called “lamps”. For other types of lamp, additionally it will be revised when a need for them is recognized.

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 60050 (all parts), *International Electrotechnical Vocabulary* (available at <http://www.electropedia.org>)

IEC/PAS 62815-1, *Cold cathode fluorecent lamps – Safety specifications*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in IEC 60050-845 and the following apply.

3.1
cold cathode fluorescent lamp
fluorescent lamp with cold cathode, in which most light is emitted by the excitation of phosphors coated in the discharge vessel

3.2
nominal value
approximate quantity value used to designate or identify a lamp

3.3
rated value
quantity value for a characteristic of a lamp for specified operating conditions

Note 1 to entry: The value and the conditions are specified in this PAS, or assigned by the manufacturer or responsible vendor.

3.4
lumen maintenance
ratio of the luminous flux of a lamp at a given time in its life to its initial luminous flux, the lamp being operated under specific conditions

Note 1 to entry: The ratio is generally expressed as a percentage.

3.5
initial readings
starting characteristics of a lamp, measured before ageing, and the electrical, photometric and cathode characteristics of a lamp, measured at the end of the 100 h ageing period

3.6
reference inverter
special electronic type inverter designed for the purpose of providing comparison standards for use in testing inverters, for the selection of reference lamps and for testing regular production lamps under standardized conditions, and which, at its rated frequency, has a stable voltage/current ratio which is relatively uninfluenced by variations in current, temperature and magnetic surroundings

3.7
lamp current
true r.m.s. type of current across a lamp

3.8
lamp voltage
true r.m.s. type of voltage across a lamp when measuring the lamp current

3.9
lamp power
product of lamp current, lamp voltage and power factor

3.10
power factor
ratio of the effective power to the apparent power, (expressed as the effective power divided by the apparent power)

3.11
starting voltage
voltage between the electrodes required to start the discharge in a lamp

3.12
effective luminance length
length of the lamp having a ratio of 80 % from the centre luminance for the distribution of the uniform luminance in a tube-axis direction

3.13
luminance uniformity
ratio of maximum and minimum luminance measured on the horizontally divided points of the lamp, in which the percentage of minimum/maximum luminance among both ends and the centre shall be reported

3.14
luminance stabilization time
when centre luminance is regarded as 100 % after starting, time required after switching on a lamp to reach 95 % of centre luminance

3.15
light source colour
For the light source colour, the definitions of methods of measurement for light source colour apply.

a) Coordinates x and y coordinates x and y of a lamp centre

b) Δx and Δy the difference value between maximum and minimum for each (x, y) coordinates on lamp centre and both ends(① and ⑨ in Figure B.1)

3.16
life
length of time during which a complete lamp operates to burn-out or any other end-of-life event described in this PAS

3.17
rated life
life stated on the basis of mean value of life for the same types of lamp manufactured for a long-term period

3.18
calibration current of a reference ballast
value of the current on which the calibration and control of the reference ballast are based

3.19
type test
test or a series of tests made on a type test sample for the purpose of checking compliance of the design of a given product with the requirements of the relevant standard

3.20
type test sample
sample consisting of one or more similar units submitted by the manufacturer or responsible vendor for the purpose of a type test

4 Classification

According to design specifications, a lamp shall be classified as follows:

a) by function (by application):
- TV,
- monitor,
- communication device, etc.

b) by type:
- lamp diameter & lamp length,
- lamp shape (straight type),

c) by rated current of lamp,

d) by chromaticity coordinates of lamp.

5 Lamp requirements

5.1 General

A lamp, on which compliance with this PAS is claimed, shall conform to the safety requirements of cold cathode fluorescent lamps given in IEC/PAS 62815-1.

A lamp shall be so designed that its performance is reliable in normal and accepted use. In general, this can be achieved by satisfying the following requirements.

The requirements and tolerances permitted by this PAS are based on testing of a type test sample submitted by the manufacturer for that purpose. In principle, this type of test sample

should consist of units having characteristics typical of the manufacturer's production and be as close to the production centre-point values as possible. For guidance on sampling plans and procedures, see IEC 60410.

5.2 Tests

5.2.1 General

All tests shall be performed in accordance with Annex C, according to the order arranged by each group in Table 3. In the case of sequential tests with the same sample, the former test results shall not influence the following test result, and the destructive test shall be performed last of all.

NOTE However, the destructive test can be performed with another sample.

5.2.2 Construction

Values of measurement of a lamp diameter, length, and lead wire length shall be in accordance with Annex A.

The surface of the lamp shall be free from bubbles, flaws and stains that would be an inconvenience during use.

5.2.3 Starting characteristic

5.2.3.1 General starting test

Immediately prior to the general starting test, the lamps shall be kept inoperative and in an ambient temperature of between 23 °C and 27 °C and a relative humidity of 65 % maximum for a period of at least 24 h. When tested as shown in Figure C.1 or C.2 under windless conditions, the lamp shall start within 1 s.

5.2.3.2 Low temperature starting test

Immediately prior to the starting test of low temperature the lamps shall be kept inoperative and in an ambient temperature of between 9 °C and 11 °C and a relative humidity of 65 % maximum for a period of at least 24 h. When tested under windless conditions, the lamp shall start within 1s.

5.2.3.3 Lamp voltage

When measured after setting the rated supply voltage, the lamp voltage shall be in the range ±10 % of the values assigned by the manufacturer.

5.2.3.4 Lamp current

When measured, the lamp current shall be in the range ±10 % of the values assigned by the manufacturer.

5.2.4 Luminance

The centre of aperture of the luminance measurement device shall be always placed at the middle of the external diameter of the lamp with the appropriate working distance. Measurement points shall be set at the centre (⑤ in Figure B.1) and at both end points (① and ⑨ in Figure B.1) when the full length of the lamp is divided into 10 equal parts. Measurements shall be performed at 0˚, 90˚, 180˚, and 270˚ in circumference direction for 3 points and each average of 3 points shall be reported. The measuring luminance shall be within ±10 % of specification.