



SLOVENSKI STANDARD
SIST EN 60188:1999

01-julij-1999

High-pressure mercury vapour lamps (IEC 60188:1974+A:1976+A2:1979+A3:1984, modified)

High-pressure mercury vapour lamps

Quecksilberdampf-Hochdrucklampen

Lampes à décharge à vapeur de mercure à haute pression

STANDARD PREVIEW
(standards.iteh.ai)

Ta slovenski standard je istoveten z: EN 60188:1988

<https://standards.iteh.ai/catalog/standards/sist/47a7085b-02e3-494a-a72a-2aa1035b1d26/sist-en-60188-1999>

ICS:

29.140.30 Fluorescent lamps.
Discharge lamps

SIST EN 60188:1999

en

iTeh STANDARD PREVIEW
(standards.iteh.ai)

SIST EN 60188:1999

<https://standards.iteh.ai/catalog/standards/sist/47a7085b-02e3-494a-a72a-2aa1035b1d26/sist-en-60188-1999>

EUROPEAN STANDARD

EN 60 188

NORME EUROPEENNE

February 1988

EUROPAISCHE NORM

UDC: 621.327.534.2:620.1

KEY WORDS: Lighting fitting; mercury vapour lamp; definition; dimension; electrical characteristic; test conditions; luminous flux; torsion test; electrical starting test

ENGLISH VERSION

HIGH-PRESSURE MERCURY VAPOUR LAMPS
(IEC 188 (1974 - 2nd edition
+ Amendment No 1 (1976) + Amendment No 2 (1979)
+ Amendment No 3 (1984), modified))

Lampes à décharge à vapeur de mercure à haute pression
(CEI 188 (1974 - 2ème édition
+ Modification n° 1 (1976)
+ Modification n° 2 (1979)
+ Modification n° 3 (1984), modifiée))

Quecksilberdampf-Hochdrucklampen
(IEC 188 (1974 - 2. Ausgabe
+ Änderung Nr. 1 (1976)
+ Änderung Nr. 2 (1979)
+ Änderung Nr. 3 (1984), modifiziert))

ITeh STANDARD PREVIEW
(standards.iteh.ai)

This European Standard was ratified by CENELEC on 1986-09-10. CENELEC members are bound to comply with the requirements of the 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 CENELEC Central Secretariat or to any CENELEC member.

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

CENELEC members are the national electrotechnical committees of Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxemburg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

CENELEC

European Committee for Electrotechnical Standardization
Comité Européen de Normalisation Electrotechnique
Europäisches Komitee für Elektrotechnische Normung

Central Secretariat: rue Bréderode 2, B-1000 Brussels

BRIEF HISTORY

The CENELEC Questionnaire Procedure performed for finding out whether or not IEC 188 (2nd edition, 1974) including Amendment No. 1 (1976), Amendment No. 2 (1979) and Amendment No. 3 (1984) could be accepted without textual changes, has shown that one common modification was necessary for the acceptance as European Standard (EN). The Reference Document was submitted to the CENELEC members for vote and acceptance by CENELEC.

TECHNICAL TEXT

The text of the International Standard IEC 188 (2nd edition, 1974) including Amendment No. 1 (1976), Amendment No. 2 (1979) and Amendment No. 3 (1984), was approved by CENELEC on 10th September 1986 as a European Standard with one agreed CENELEC common modification, which is applicable in several places in the text of IEC 188 (1974). This modification deletes all references to lamps with E26 and E39 caps and for the sake of clarity, every place where this deletion has been made is marked by a vertical line in the left-hand margin. In addition, data sheets 188-IEC-3-7A-1 and 188-IEC-3-8A-1 have been entirely deleted since they refer exclusively to E39 caps. Editorial CENELEC common modifications to IEC Publication became necessary for the European Standard; they are also marked by a vertical line in the left-hand margin.

The following dates were fixed:

doa: 1987-03-15
dop /dow: 1988-03-15

iteh STANDARD PREVIEW
(standards.iteh.ai)

Appendices designated "normative" are part of the body of the standard. Appendices designated "informative" are given only for information.

In this European Standard, Appendices A to D from the Reference Document are normative and also Appendix E added by CENELEC.

CONTENTS

Brief history	2
Technical text	2
Preface of IEC Publication 188 (1974)	4

SECTION ONE - TEST REQUIREMENTS

Clause

1. Scope	5
2. Definitions	5
3. Marking	6
4. Lamp dimensions	6
5. Caps	6
6. Starting and warm-up characteristics	7
7. Electrical and luminous characteristics	7
APPENDIX A (normative) - Torsion test	8
APPENDIX B (normative) - Starting and warm-up tests	9
APPENDIX C (normative) - Methods of measuring electrical and luminous characteristics of the lamp.....	10
APPENDIX D (normative) - Test conditions for red-ratio measurement.....	12
APPENDIX E (normative) - Other international publications quoted in this standard	14

SECTION TWO - LAMP DATA SHEETS

8. General principles of numbering sheets	15
9. List of specific lamp types	15

SECTION THREE - MAXIMUM LAMP OUTLINES

10. General	16
11. List of maximum lamp outlines	16

INFORMATION as to original IEC text:

The Foreword of IEC Publication 188 (1974) is not part of this European Standard.

Appendix E (normative) is not included in IEC 188 (1974).

HIGH-PRESSURE MERCURY VAPOUR LAMPS

INFORMATION as to original IEC text

The Foreword of IEC Publication 188 (1974) is not part of this European Standard. It reads:

- 1) The formal decisions or agreements of the IEC on technical matters, prepared by Technical Committees on which all the National Committees having a special interest therein are represented, express, as nearly as possible, an international consensus of opinion on the subjects dealt with.
- 2) They have the form of recommendations for international use and they are accepted by the National Committees in that sense.
- 3) In order to promote international unification, the IEC expresses the wish that all National Committees should adopt the text of the IEC recommendation for their national rules in so far as national conditions will permit. Any divergence between the IEC recommendations and the corresponding national rules should, as far as possible, be clearly indicated in the latter.
- 4) The IEC has not laid down any procedure concerning marking as an indication of approval and has no responsibility when an item of equipment is declared to comply with one of its recommendations.

Preface of IEC Publication 188 (1974)

This standard has been prepared by Sub-Committee 34A: Lamps, of IEC Technical Committee No. 34, Lamps and Related Equipment.

Draft proposals for this standard were prepared by the Experts' Working Group (PRESCO) and as a result of the meetings held in London in 1968 and in Washington in 1970, drafts, Documents 34A(Central Office)57 and 34A(Central Office)70, were submitted to the National Committees for approval under the Six Months' Rule in February 1970 and in May 1971. Amendments, Document 34A(Central Office)73, were submitted to the National Committees for approval under the Two Months' Procedure in June 1971.

The following countries voted explicitly in favour of publication:

Australia	Netherlands
Austria	Poland
Canada	Portugal
Czechoslovakia	Sweden
Denmark	Switzerland
Finland	Turkey
France	Union of Soviet
Germany	Socialist Republics
Italy	United Kingdom
Japan	Yugoslavia
Korea (Republic of)	

HIGH-PRESSURE MERCURY VAPOUR LAMPS

SECTION ONE — TEST REQUIREMENTS

1. Scope

These recommendations state the methods of test to be used for determining the characteristics of high-pressure mercury vapour lamps with or without a red correcting fluorescent coating, operating on a.c. mains with a ballast satisfying the requirements of IEC Publication 262: Ballasts for High Pressure Mercury Vapour Lamps. These requirements relate only to type testing.

Details of maximum lamp outlines are also included for guidance in luminaire design.

2. Definitions

For the definitions of general terms used in these recommendations, reference should be made to Group 45: Lighting, of the International Electrotechnical Vocabulary (see IEC Publication 50(45)). For the purpose of this publication the following definitions shall apply:

2.1 *Rated wattage*

The wattage marked on the lamp.

2.2 *Lamp starting voltage*

The r.m.s. voltage at the lamp terminals at which the lamp starts.

2.3 *Minimum open circuit voltage for stable operation*

The minimum open circuit voltage to be provided by an inductive ballast for stable operation of the lamp.

2.4 *Initial readings*

The photometric and electrical measurements, made at the end of the ageing period.

2.5 *Red ratio*

The ratio of the luminous flux emitted by the lamp in the red portion of the visible spectrum to the total luminous emission of the lamp.

For the purpose of this recommendation, the red portion is defined by the part of the visible spectrum comprising the wavelengths above 600 nm.

2.6 *Rated luminous flux*

The rated luminous flux expressed in lumens, declared by the manufacturer or the responsible seller.

2.7 Reference ballast

A special inductive type ballast designed for use: *a)* in testing lamps, *b)* as a comparison standard for testing ballasts, and *c)* in the selection of reference lamps. It is essentially characterized by a stable voltage/current ratio which is relatively uninfluenced by variations in current, temperature and magnetic surroundings.

2.8 Lamp neck length

The distance measured parallel to the lamp axis between the bottom of the cap contact and that point on the lamp bulb where the diameter is 2 mm greater than the maximum neck diameter.

2.9 Calibration current

The value of the current on which the calibration and control of the reference ballast are based.

2.10 Type test

A 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 specification.

2.11 Type test sample

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

[SIST EN 60188:1999](https://standards.iteh.ai/catalog/standards/sist/47a7085b-02e3-494a-a72a-2aa1035b1d26/sist-en-60188-1999)

<https://standards.iteh.ai/catalog/standards/sist/47a7085b-02e3-494a-a72a-2aa1035b1d26/sist-en-60188-1999>

3. Marking

The following information shall be distinctly and durably marked on the lamp:

- a)* mark of origin. This may take the form of a trade mark, the manufacturer's identification mark or the name of the responsible seller;
- b)* rated wattage.

4. Lamp dimensions

The lamp dimensions shall comply with the requirements given on the relevant lamp sheet.

5. Caps

- a)* The cap on the finished lamp shall comply, as appropriate, with the requirements of sheet Nos. 7006 - 27 - 28 - 50 - 52 of IEC Publication 61: Lamp Caps and Holders Together with Gauges for the Control of Interchangeability and Safety.
- b)* The cap shall be so constructed and attached to the bulb that it will withstand the torsion test specified in Appendix A.

6. Starting and warm-up characteristics

Before ageing, lamp starting and warm-up characteristics shall be checked as specified in Appendix B.

Note. — Normally it should be expected that at 100% of the rated supply voltage, lamps will start satisfactorily at temperatures down to -18°C .

7. Electrical and luminous characteristics

7.1 Position of operation

The lamp shall operate in a vertical, cap up position.

7.2 Ageing

Before the initial readings are taken the lamp shall be aged for 100 h using the circuit and relevant requirements as specified in Appendix B. The supply voltage shall not vary by more than $\pm 10\%$ * and the frequency by not more than ± 1 Hz.

7.3 Lamp voltage and wattage

- a) The voltage at the lamp terminals using the test conditions in Appendix C shall be within the limits specified in the relevant lamp sheet.
- b) The wattage dissipated by the lamp using the test conditions in Appendix C shall not exceed the maximum wattage specified in the relevant lamp sheet.

7.4 Luminous flux

The luminous flux of individual lamps shall be not less than 90% of the rated value using the test conditions in Appendix C.

7.5 Red ratio (fluorescent coated lamps only)

The red ratio shall be not less than 00% (value under consideration), using the test conditions in Appendix D.

7.6 Lamp stability with rapidly reduced supply voltage

Lamps shall not extinguish if the supply voltage falls from 100% to 90% of the rated voltage in not more than 0.5 s and remains at that value for at least 5 s.

* This is to avoid the necessity of having a stabilized voltage and to permit the use of a normal mains supply.

APPENDIX A

TORSION TEST

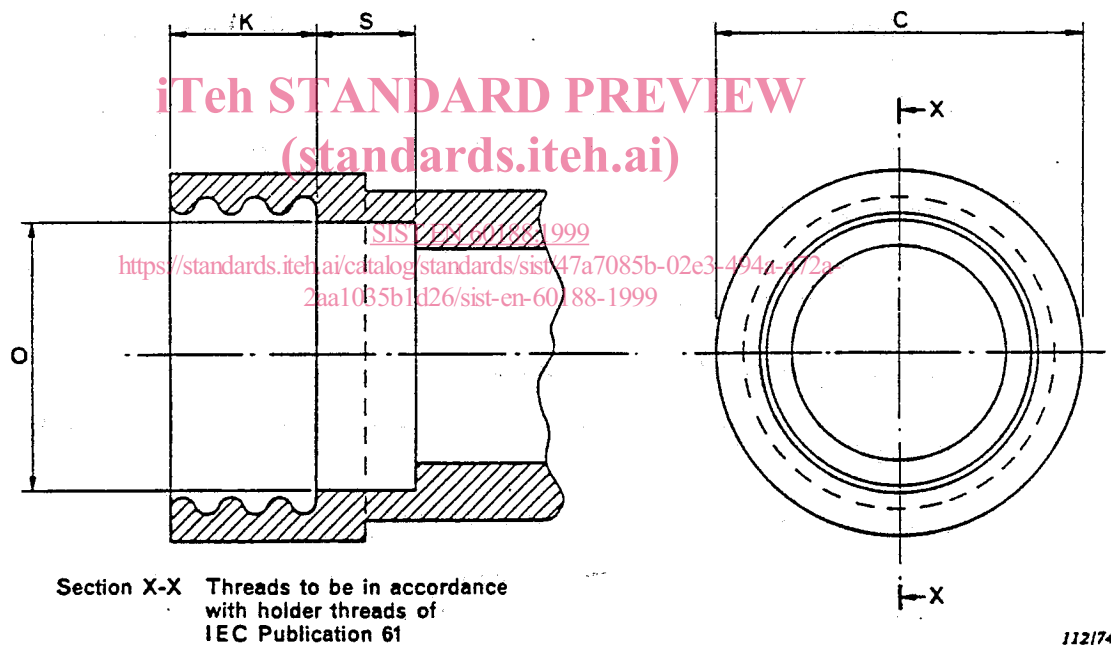
Torsion test holder for screw caps E27, ~~E27~~ and E40

The torsion test shall be carried out using the special lampholders shown in Figure 1 and with the following values of torque gradually applied:

E27 3.0 Nm

~~E39 5.0 Nm~~

E40 5.0 Nm



112/74

(Dimensions in mm)

Dimension	E27	E27 E40	Tolerance
C	32.0	47.0	Minimum
K	11.0	19.0	± 0.3
O	23.0	34.0	± 0.1
S	12.0	13.0	Minimum

FIGURE 1

APPENDIX B

STARTING AND WARM-UP TESTS

1. General

- 1.1 Lamps shall not be operated during the 5 h immediately prior to making this test.
- 1.2 They shall be tested and aged using a nominal 50 Hz or 60 Hz supply (in an ambient temperature between 20 °C and 30 °C) using the circuit shown in Figure 2.
- 1.3 The ballast shall be of the inductive type and shall satisfy the requirements of IEC Publication 262: Ballasts for High Pressure Mercury Vapour Lamps.
- 1.4 During these tests, lamps shall be operated in a vertical, cap up position.

2. Starting test

- 2.1 The voltage V_1 shall be set to the starting voltage given in the relevant lamp sheet.
- 2.2 The voltmeter V_2 shall be open-circuited using switch S_1 .
- 2.3 The ammeter shall be short-circuited, using switch S_2 .

3. Warm-up test

- 3.1 Immediately after starting, the supply voltage shall be adjusted to maintain the warm-up lamp current specified in the relevant lamp sheet.
- 3.2 The supply voltage shall be varied during the warm-up time to maintain this current constant.
- 3.3 The test shall be considered satisfactory if the minimum warm-up voltage at lamp terminals is achieved within the time specified in the relevant lamp sheet.

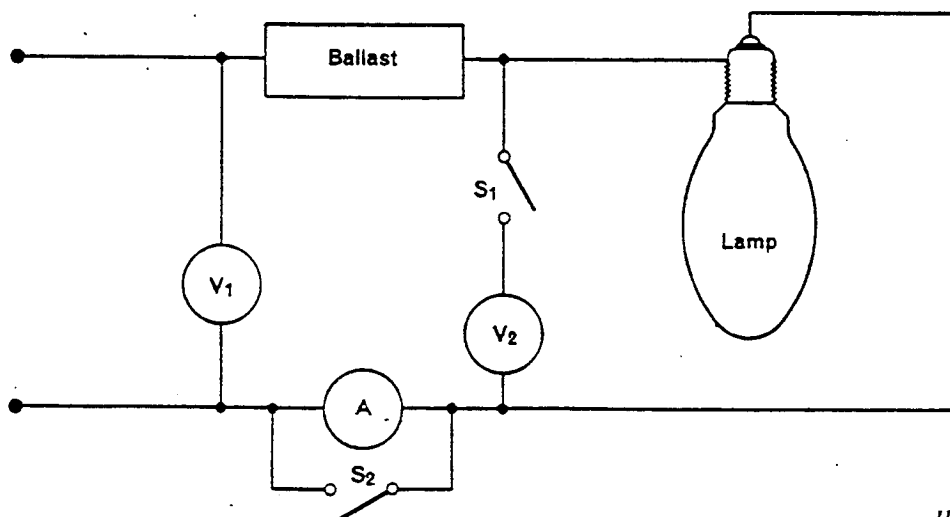


FIGURE 2

APPENDIX C

METHODS OF MEASURING ELECTRICAL AND LUMINOUS CHARACTERISTICS
OF THE LAMP

1. General

- 1.1 Ballasts used for these tests shall be reference ballasts having a voltage-to-current ratio and power factor as specified in the relevant lamp sheets and meeting the general requirements for reference ballasts given in IEC Publication 262, Ballasts for High Pressure Mercury Vapour Lamps.
- 1.2 Lamps shall be tested in a circuit as shown in Figure 3, ~~using a nominal 50 Hz or 60 Hz supply~~ using a nominal 50 Hz or 60 Hz supply as appropriate, at an ambient temperature of between 20 °C and 30 °C.

2. Supply

- 2.1 The frequency shall be that for which the ballast is designed with a tolerance of $\pm 0.5\%$.
- 2.2 The voltage at the supply terminals is adjusted to the rated value of the reference ballast used.
- 2.3 The total harmonic content of the supply voltage shall not exceed 3%, the harmonic content being defined as the root-mean-square (r.m.s.) summation of the individual harmonic components, using the fundamental as 100%. [SIST EN 60188:1999](http://standards.iteh.ai/catalog/standards/sist/47a7085b-02e3-494a-a72a-2aa1d35b1d26/sist-en-60188-1999)
Note. — This implies that the source of supply shall have sufficient power and that the supply circuit shall have a sufficiently low impedance compared with the ballast impedance and care should be taken that this applies under all conditions that occur during the measurement.
- 2.4 During the period of stabilization, the supply voltage and frequency should be stable within $\pm 0.5\%$ this tolerance being reduced to $\pm 0.2\%$ at the moment of measurement.

3. Instruments and measurements

- 3.1 Potential circuits of instruments connected across a lamp shall take not more than 3% of the objective lamp current.
- 3.2 Instruments connected in series with the lamp shall have a sufficiently low impedance such that the voltage drop shall not exceed 2% of the objective lamp voltage.
- 3.3 Instruments shall be of a precision appropriate to the requirements and essentially free from waveform errors.
- 3.4 When measuring lamp voltage, the wattmeter potential circuit shall be open and the wattmeter current coil shall be short-circuited.
- 3.5 When measuring lamp power, the lamp voltmeter circuit shall be open and the ammeter shall be short-circuited. No correction shall be made for the power consumed by the wattmeter potential coil as the potential coil is connected on the lamp side of the current coil.