

**SLOVENSKI  
STANDARD**

**SIST EN 60920:1995**

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december 1995

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Ballasts for tubular fluorescent lamps - General and safety requirements (IEC 920:1990)

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EUROPEAN STANDARD

EN 60920

NORME EUROPEENNE

EUROPÄISCHE NORM

April 1991

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Descriptors: Lighting equipment, tubular lamp, fluorescent lamp, electric ballast, safety requirement, protection against electric shocks, test

## ENGLISH VERSION

BALLASTS FOR TUBULAR FLUORESCENT LAMPS  
GENERAL AND SAFETY REQUIREMENTS  
(IEC 920:1990)

Ballasts pour lampes tubulaires  
à fluorescence - Prescriptions  
générales et prescriptions de  
sécurité  
(CEI 920:1990)

Vorschaltgeräte für  
röhrenförmige Leuchtstofflampen  
Allgemeine und  
Sicherheitsanforderungen  
(IEC 920:1990)

-12- 1990

## iTeh STANDARD PREVIEW

This European Standard was approved by CENELEC on 1991-03-15.  
CENELEC members are bound to comply with the CEN/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 Central Secretariat or to any CENELEC member.

This European Standard exists in three official versions (English, French, German).  
A version in any other language made by translation under the responsibility of  
a CENELEC member into its own language and notified to the 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, Iceland, Ireland, Italy, Luxembourg,  
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## CENELEC

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

Central Secretariat: rue de Stassart 35, B-1050 Brussels

FOREWORD

Following a decision taken by CENELEC Technical Committee TC 34Z at their meeting in Brussels in February 1989, the International Standard IEC 920:1990 was submitted to the CENELEC Unique Acceptance Procedure (UAP) in August 1990 for acceptance as a European Standard.

The text of the reference document was approved by CENELEC as EN 60920 on 15 March 1991.

The following dates were fixed:

- latest date of publication of  
an identical national standard (dop) 1992-03-01
- latest date of withdrawal of  
conflicting national standards (dow) 1992-03-01

For products which have complied with the relevant national standard before 1992-03-01, as shown by the manufacturer or by a certification body, this previous standard may continue to apply for production until 1997-03-01.

Annexes designated "normative" are part of the body of the standard. Annexes designated "informative" are given only for information. In this standard, annex ZA is normative and annex ZB is informative.

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ENDORSEMENT NOTICE  
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The text of the International Standard IEC 920:1990 was approved by CENELEC as a European Standard without any modification.

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## ANNEX ZA (normative)

OTHER INTERNATIONAL PUBLICATIONS QUOTED IN THIS STANDARD  
WITH THE REFERENCES OF THE RELEVANT EUROPEAN PUBLICATIONS

When the international publication has been modified by CENELEC common modifications, indicated by (mod), the relevant EN/HD applies.

<u>IEC Publication</u>	<u>Date</u>	<u>Title</u>	<u>EN/HD</u>	<u>Date</u>
81	1984	Tubular fluorescent lamps for general lighting service	EN 60081**	1989
216	-	Guide for the determination of thermal endurance properties of electrical insulating materials	-	-
249	-	Base materials for printed circuits	HD 313	-
317	-	Specifications for particular types of winding wires	HD 555	-
384-14	1981	Fixed capacitors for use in electronic equipment Part 14: Sectional specification Fixed capacitors for radio interference suppression Selection of methods of test and general requirements	-	-
417C	1977	Graphical symbols for use on equipment - Index, survey and compilation of the single sheets Third supplement	HD 243 S3*	1978
529	1976	Classification of degrees of protection provided by enclosures	HD 365 S1*	1978
566	1982	Capacitors for use in tubular fluorescent and other discharge lamp circuits	-	-
598-1, mod	1986	Luminaires - Part 1: General requirements and tests	EN 60598-1*	1989

\* Superseded by:

IEC 417 + Supplements A up to H HD 243 S8 1989

IEC 529:1976 + A1:1978 + A2:1983 HD 365 S3 1985

IEC 598-1:1986 + A1:1988, mod EN 60598-1 1989  
(Reprint October)

\*\* Also endorses IEC amendments 1:1987 and 2:1988

<u>IEC Publication</u>	<u>Date</u>	<u>Title</u>	<u>EN/HD</u>	<u>Date</u>
691, mod	1980	Thermal-links	EN 60691	1987
695-2-1	1980	Fire hazard testing - Part 2: Test methods - Glow-wire test and guidance	HD 444.2.1 S1	1983
695-2-2	1980	Fire hazard testing - Part 2: Test methods - Needle-flame test	HD 444.2.2 S1	1983
730-2-3, mod	1990	Automatic electrical controls for household and similar use Part 2: Particular requirements for thermal protectors for ballasts for tubular fluorescent lamps	prEN 60730-2-3	-
921, mod	1988	Ballasts for tubular fluorescent lamps - Performance requirements	EN 60921	1991
928	1990	A.C. supplied electronic ballasts for tubular fluorescent lamps - General and safety requirements	EN 60928	1991

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Other publications quoted: [be68c955809c/sist-en-60920-1995](https://standards.iteh.ai/catalog/standards/sist/9977ae43-a153-48fd-a46f-be68c955809c/sist-en-60920-1995)

ISO Standard 4046 (1978): Paper, board, pulp and related terms -  
Vocabulary

IEEE 101 (1972): Guide for the statistical analysis of  
thermal life test data

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**ANNEX ZB (informative)****National A-deviations**

A-deviation: National deviation due to regulations, the alteration of which is for the time being outside the competence of the CENELEC member.

This European Standard falls under Directive 73/23/EEC. A-deviations in an EFTA-country are valid instead of the relevant provisions of the European Standard in that country until they have been removed.

Clause	National Deviation
6.1 f)	SWEDEN (Wiring Regulations STEV-FS 1988:1, § 40) $t_w$ values above 130°C are not accepted.
6.2 e)	S - Constants other than 4 500 are not accepted.

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Ballasts pour lampes tubulaires à fluorescence

Prescriptions générales et prescriptions de  
sécurité

**iTeh STANDARD PREVIEW**

**Ballasts for tubular fluorescent lamps**

**General and safety requirements**

<https://standards.iteh.ai/catalog/standards/sist/9977ae43-a153-48fd-a46f-be68c955809c/sist-en-60920-1995>



Numéro de référence  
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## INTERNATIONAL ELECTROTECHNICAL COMMISSION

## BALLASTS FOR TUBULAR FLUORESCENT LAMPS

## GENERAL AND SAFETY REQUIREMENTS

## FOREWORD

- 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 recommendation 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.

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## PREFACE

This standard has been prepared by Sub-Committee 34C: Auxiliaries for discharge lamps, of IEC Technical Committee No. 34: Lamps and related equipment.

The text of this standard is based upon the following documents:

Six Months' Rule	Reports on Voting	Two Months' Procedure	Report on Voting
34C(CD)147 34C(CD)165	34C(CD)158 34C(CD)178	34C(CD)184	34C(CD)194

Full information on the voting for the approval of this standard can be found in the Voting Reports indicated in the above table.

In this standard, the following print types are used:

- requirements proper: in roman type;
- test specifications: in italic type;
- explanatory matter: in smaller roman type.

The following IEC Publications are quoted in this standard:

Publications Nos. 81 (1984): Tubular fluorescent lamps for general lighting service.

216: Guide for the determination of thermal endurance properties of electrical insulating materials.

249: Base materials for printed circuits.

317: Specifications for particular types of winding wires.

384-14 (1981): Fixed capacitors for use in electronic equipment, Part 14: Sectional specification: Fixed capacitors for radio interference suppression. Selection of methods of test and general requirements.

417C (1977): Graphical symbols for use on equipment. Index, survey and compilation of the single sheets. Third supplement.

529 (1976): Classification of degrees of protection provided by enclosures.

566 (1982): Capacitors for use in tubular fluorescent and other discharge lamp circuits.

598-1 (1986): Luminaires, Part 1: General requirements and tests.

691 (1980): Thermal links.

695-2-1 (1980): Fire hazard testing, Part 2: Test methods: Glow-wire test and guidance.

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695-2-2 (1980): Fire hazard testing, Part 2: Test methods - Needle-flame test.

730-2-3 (1990): Automatic electrical controls for household and similar use, Part 2: Particular requirements for thermal protectors for ballasts for tubular fluorescent lamps.

921 (1988): Ballasts for tubular fluorescent lamps - Performance requirements.

928 (1990): A.C. supplied electronic ballasts for tubular fluorescent lamps - General and safety requirements.

Other publications quoted:

ISO standard 4046 (1978): Paper, board, pulp and related terms - Vocabulary.

IEEE 101 (1972): Guide for the statistical analysis of thermal life test data.

## BALLASTS FOR TUBULAR FLUORESCENT LAMPS GENERAL AND SAFETY REQUIREMENTS

### Introduction

This standard covers general and safety requirements for ballasts for tubular fluorescent lamps; section one describes general requirements and section two gives safety requirements.

Performance requirements for these ballasts are the subject of IEC Publication 921.

*Note.*- Safety requirements ensure that electrical equipment constructed in accordance with these requirements does not endanger the safety of persons, domestic animals or property when properly installed and maintained and used in applications for which it was intended.

Relevant clauses of this standard, for example those dealing with thermal endurance tests for windings, apply also to ballasts which form an integral part of a luminaire and which cannot be tested separately.

The thermal characteristics of ballasts are specified by the rated maximum operating temperature of the winding (symbol  $t_w$ ) which shall not be exceeded in order to ensure a sufficient length of life for the ballast when it is built into a luminaire. In addition, for ballasts which are subjected to abnormal conditions, the limiting temperature is given which shall not be exceeded when the ballast is built into a luminaire. Moreover, an indication of the rated temperature rise of a winding (symbol  $\Delta t$ ) may be added as an optional requirement.

For checking the rated maximum operating temperature  $t_w$ , this standard specifies an endurance test period of 30 days as the standard method. At the manufacturer's choice, optional endurance test periods of 60, 90 or 120 days may be used.

This standard permits the use of constants  $S$  other than 4 500 in  $t_w$  tests. If a claim is not made to the contrary, the endurance testing of ballasts is based on the constant  $S$ , given in Appendix A, having a value of 4 500. A manufacturer may claim the use of other values if this can be justified by either of the tests specified.

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

## SECTION ONE - GENERAL REQUIREMENTS

## 1. Scope

This standard covers ballasts, excluding resistance types, for use on a.c. supplies up to 1 000 V at 50 Hz or 60 Hz, associated with tubular fluorescent lamps with or without pre-heated cathodes operated with or without a starter or starting device and having rated wattages, dimensions and characteristics as specified in IEC Publication 81.

It applies to complete ballasts and to their component parts such as reactors, transformers and capacitors. Particular requirements for thermally protected ballasts are given in Appendix B.

This standard also specifies ballasts for lamps which are not yet fully standardized.

Ballasts for conventional operation of lamps at mains frequency are covered. A.C. supplied electronic ballasts for high frequency operation are excluded. These are specified in IEC Publication 928.

Capacitors having a capacitance greater than 0.1  $\mu\text{F}$  are covered by IEC Publication 566. Capacitors having a capacitance less than or equal to 0.1  $\mu\text{F}$  are specified in IEC Publication 384-14.

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## 2. Definitions

For the purposes of this standard, the following definitions apply.

## 2.1 Ballast

Unit inserted between the supply and one or more discharge lamps which by means of inductance, capacitance, or a combination of inductance and capacitance serves mainly to limit the current of the lamp(s) to the required value. The ballast may consist of one or more separate components.

It may also include means for transforming the supply voltage and arrangements which help to provide starting voltage and pre-heating current, prevent cold starting, reduce stroboscopic effects, correct the power-factor and/or suppress radio interference.

## 2.1.1 Independent ballast

Ballast which can be mounted separately outside a luminaire without any additional enclosure. This may consist of a built-in ballast housed in a suitable enclosure which provides all the necessary protection according to its markings.

### 2.1.2 *Built-In ballast*

Ballast exclusively designed to be built into a luminaire, a box, an enclosure or the like. The control gear compartment in the base of a road lighting column is considered to be an enclosure.

### 2.1.3 *Integral ballast*

Ballast which forms a non-replaceable part of a luminaire and which cannot be tested separately from the luminaire.

### 2.2 *Reference ballast*

Special inductive ballast designed for the purpose of providing comparison standards for use in testing ballasts and for the selection of reference lamps. It is essentially characterized by a stable voltage-to-current ratio, which is relatively uninfluenced by variations in current, temperature and magnetic surroundings, as outlined in Appendix C. of IEC Publication 921.

### 2.3 *Reference lamp*

Lamp selected for testing ballasts which, when associated with a reference ballast, has electrical characteristics which are close to the nominal values as stated in the relevant lamp standard.

### 2.4 *Calibration current of a reference ballast*

Value of the current on which are based the calibration and control of the ballast.

*Note.*- Such a current should preferably be approximately equal to the nominal running current of the lamps for which the reference ballast is suitable.

### 2.5 *Supply voltage*

Voltage applied to the complete circuit of lamp(s) and ballast.

### 2.6 *Supply current*

Current supplied to the complete circuit of lamp(s) and ballast.

### 2.7 *Working voltage*

Highest r.m.s. voltage which may occur across any insulation, transients being neglected, in open-circuit conditions or during lamp operation when the ballast is operated at its rated voltage.