

INTERNATIONAL STANDARD

NORME INTERNATIONALE

Lamps for road vehicles – Dimensional, electrical and luminous requirements

Lampes pour véhicules routiers – Exigences dimensionnelles, électriques et lumineuses

[IEC 60809:2014](#)

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Lamps for road vehicles – Dimensional, electrical and luminous requirements

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

LAMPS FOR ROAD VEHICLES – DIMENSIONAL, ELECTRICAL AND LUMINOUS REQUIREMENTS

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International Standard IEC 60809 has been prepared by subcommittee 34A: Lamps, of IEC technical committee 34, Lamps and related equipment.

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

FDIS	Report on voting
34A/1798/FDIS	34A/1819/RVD

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

This third edition cancels and replaces the second edition (1995), its Amendment 1 (1996), its Amendment 2 (2002), its Amendment 3 (2004), its Amendment 4 (2009) and its Amendment 5 (2012). This edition constitutes a technical revision.

This edition includes the following significant technical changes with respect to the previous edition:

- a) the introduction of requirements for non-replaceable filament lamps;
- b) the introduction of requirements for LED light sources.

This publication has been drafted in accordance with the ISO/IEC Directives, Part 2. However, as the original editable data sheets and some figures from previous editions were not available, they have been reproduced in their old format which does not comply fully with the current drafting rules.

The committee has decided that the contents of this publication will remain unchanged until the stability date indicated on the IEC web site under "<http://webstore.iec.ch>" in the data related to the specific publication. At this date, the publication will be

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- withdrawn,
- replaced by a revised edition, or
- amended.

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LAMPS FOR ROAD VEHICLES – DIMENSIONAL, ELECTRICAL AND LUMINOUS REQUIREMENTS

1 Scope

This International Standard is applicable to replaceable and standardised lamps (filament lamps, discharge lamps and LED light sources) to be used in headlamps, fog-lamps and signalling lamps for road vehicles. In some applications, these lamps may be installed as non-replaceable.

This standard is especially applicable to those lamps which are the subject of legislation. In particular, it includes the lamps contained in Regulations No. 37, No. 99, No. 128 and its series of amendments of the Geneva Agreement of 20 March 1958 of the United Nations Economic Commission for Europe (UNECE). However, the standard may be used for other lamps falling under the scope of this standard, as well as lamps which are subject of legislation but not contained in Regulations No. 37, No. 99 and No. 128, e.g. the non-replaceable (filament) lamps and LED modules.

For replaceable and standardised lamps, the standard specifies the technical requirements with methods of tests and basic interchangeability (dimensional, electrical and luminous) for lamps of normal production and for standard (étalon) lamps.

For most of the requirements given in this standard, reference is made to the “relevant lamp data sheet”. For all lamps listed in Clause 8, data sheets are contained in this standard or included by reference. For other lamps, the relevant data are supplied by the lamp manufacturer or responsible vendor. It could be based on national legislation.

Other requirements to replaceable and standardised lamps such as lamp life, luminous flux maintenance, torsion strength and resistance to vibration and shock are specified in IEC 60810. Such requirements to non-replaceable lamps are given in this standard.

For some test methods, reference is made to IEC 60810.

Road vehicle lamps for supplementary purposes which are not the subject of legislation are specified in IEC 60983.

In countries which legislate for approval, for example under the terms of the aforementioned UN Regulations, it is suggested that reference is made to this standard for assessment of compliance. IEC 60810 and IEC 60983 are not intended for that purpose.

NOTE 1 In various vocabularies and standards, different terms are used for "incandescent lamp", "discharge lamp" and "LED lamp". In this standard "filament lamp", "discharge lamp" and "LED light source" are used. However, where only "lamp" is written all three kinds of lamp are meant, unless the context clearly shows that it applies to one kind only.

NOTE 2 Wherever the term “device” is used, it is meant to designate equipment which is used as luminaire. It can take the form and purpose of a headlight or signal light.

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 60051-1, *Direct acting indicating analogue electrical measuring instruments and their accessories – Part 1: Definitions and general requirements common to all parts*

IEC 60061-1, *Lamp caps and holders together with gauges for the control of interchangeability and safety – Part 1: Lamp caps*

IEC 60810:2014, *Lamps for road vehicles – Performance requirements*

IEC 60983, *Miniature lamps*

IEC 62504, *General lighting – Light emitting diode (LED) products and related equipment – Terms and definitions*

CIE 15:2004, *Colorimetry*

United Nations, *Agreement concerning the adoption of uniform technical prescription for wheeled vehicles, equipment and parts which can be fitted and/or be used on wheeled vehicles and the conditions for reciprocal recognition of approvals granted on the basis of these prescriptions*¹

Available from Internet: www.unece.org/trans/main/wp29/wp29regs.html (website checked 2014-08-12)

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Addendum 3: Regulation No. 4, *Uniform provisions concerning the approval of devices for the illumination of rear registration plates of power-driven vehicles and their trailers*

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Addendum 5: Regulation No. 6, *Uniform provisions concerning the approval of direction indicators for power-driven vehicles and their trailers*

Addendum 6: Regulation No. 7, *Uniform provisions concerning the approval of front and rear position lamps, stop-lamps and end-outline marker lamps for motor vehicles (except motor cycles) and their trailers*

Addendum 22: Regulation No. 23, *Uniform provisions concerning the approval of reversing and manoeuvring lamps for power-driven vehicles and their trailers*

Addendum 36: Regulation No. 37, *Uniform provisions concerning the approval of filament lamps for use in approved lamp units of power-driven vehicles and of their trailers*

Addendum 37: Regulation No. 38, *Uniform provisions concerning the approval of rear fog lamps for power-driven vehicles and their trailers*

Addendum 49: Regulation No. 50, *Uniform provisions concerning the approval of front position lamps, rear position lamps, stop lamps, direction indicators and rear-registration-plate illuminating devices for vehicles of category L*

Addendum 76: Regulation No. 77, *Uniform provisions concerning the approval of parking lamps for power-driven vehicles*

¹ Also known as *The 1958 Agreement*. In the text of this standard the regulations under this agreement are referred to as, for example, UN Regulation 37 or R 37.

Addendum 86: Regulation No. 87, *Uniform provisions concerning the approval of daytime running lamps for power-driven vehicles*

Addendum 90: Regulation No. 91, *Uniform provisions concerning the approval of side-marker lamps for motor vehicles and their trailers*

Addendum 98: Regulation No. 99, *Uniform provisions concerning the approval of gas-discharge light sources for use in approved gas-discharge lamp units of power-driven vehicles*

Addendum 100: Regulation No. 101, *Uniform provisions concerning the approval of passenger cars powered by an internal combustion engine only, or powered by a hybrid electric power train with regard to the measurement of the emission of carbon dioxide and fuel consumption and/or the measurement of electric energy consumption and electric range, and of categories M₁ and N₁ vehicles powered by an electric power train only with regard to the measurement of electric energy consumption and electric range*

Addendum 118: Regulation No. 119, *Uniform provisions concerning the approval of cornering lamps for power-driven vehicles*

Addendum 127: Regulation No. 128, *Uniform provisions concerning the approval of light emitting diode (LED) light sources for use in approved lamp units on power-driven vehicles and their trailers*

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3 Terms and definitions (standards.iteh.ai)

For the purposes of this document, the terms and definitions given in IEC 60050-845, IEC 60810, IEC 62504, R 37, R 99 and R 128 as well as the following apply.

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3.1

category

term used to describe different basic designs of standardized lamps

Note 1 to entry: Each specific designation, for example P21/5W, H4, D2R forms a category. Most of these designations are taken from the UN Regulations.

3.2

type

lamps which are distinguished by common features relevant to the test applied

Note 1 to entry: Lamps bearing the same trade name or mark but produced by different manufacturers are considered as being of different types. Lamps produced by the same manufacturer differing only by the trade name or mark may be considered to be of the same type.

Note 2 to entry: Lamps with different bulb designs, insofar as it affects the optical results, are considered to be of different types.

Note 3 to entry: For filament lamps, lamps of different nominal voltages are considered to be of different types.

Note 4 to entry: A selective-yellow bulb or a selective-yellow additional outer bulb, solely intended to change the colour but not the other characteristics of a light source emitting white light, does not constitute a change of type of the light source.

3.3

type test

test or 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

3.4
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

3.5
conformity of production

compliance of the series production of a given type with the requirements of the relevant specification

Note 1 to entry: Production lamps are of the same design as the approved type test sample.

Note 2 to entry: Local regulations may provide for checking conformity of production by a government agency.

3.6
nominal voltage

voltage used to designate a lamp, usually being the battery voltage (6 V, 12 V or 24 V) of the road vehicle supply network

Note 1 to entry: The term used in the UN regulations is "rated voltage".

3.7
nominal wattage

wattage used to designate a lamp

3.8
test voltage

voltage at the cap terminals for filament lamps and at the input terminals of the ballast for discharge lamps for which some characteristics are specified and at which they shall be tested

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3.9
rated value

value of a characteristic specified for operation of a lamp at test voltage and/or other specified conditions

<https://standards.iteh.ai/catalog/standards/sist/76f6b29d-6314-4599-ab1f-563624583855/iec-60809-2014>

Note 1 to entry: The term used in the UN regulations is "objective value".

3.10
tolerance

allowable variation from a rated value generally expressed as percentage of the rated value

3.11
limit values

lowest and/or highest values for characteristics to which the lamp has to comply when operated under specified conditions

3.12
test luminous flux

specified luminous flux of a standard (étalon) lamp at which the photometric characteristics of lighting and light-signalling devices shall be measured and which has to be adjusted for testing a lamp in the standard headlamp according to 4.8

3.13
reference plane

plane defined with reference to the cap or base and with respect to which positions of certain parts of the lamp are measured

3.14**reference axis**

axis defined with reference to the cap or base and with respect to which the positions of certain parts of the lamp are measured

3.15**ageing period**

period during which unused lamps are operated at their test voltage in order to stabilize their performance

3.16**standard lamp****étalon lamp**

lamp emitting white or amber or red light with reduced dimensional tolerances, used for the photometric testing of lighting and light-signalling devices

Note 1 to entry: Standard lamps are specified for only one nominal voltage for each category.

3.17**production lamp**

lamp which shall comply with the requirements of this standard as indicated in the column "production lamps" on the relevant lamp data sheet

Note 1 to entry: The term used in the UN regulations is "lamp of normal production".

3.18**heavy duty lamp**

lamp declared as such by the manufacturer or responsible vendor which shall comply with the heavy duty test conditions specified in Table B.3 of IEC 60810:2014 in addition to the requirements specified in this standard [IEC 60809:2014](https://standards.iteh.ai/catalog/standards/sist/76f6b29d-6314-4599-ab1f-563624583855/iec-60809-2014)

<https://standards.iteh.ai/catalog/standards/sist/76f6b29d-6314-4599-ab1f-563624583855/iec-60809-2014>

3.19**main beam**

driving beam

high beam

headlight designed to illuminate for a considerable distance ahead of the vehicle carrying it

Note 1 to entry: The term used in the UN regulations is "driving beam".

3.20**dipped beam**

passing beam

low beam

headlight designed to illuminate without causing undue glare to people in front of the vehicle carrying it, particularly to the drivers of approaching vehicles

Note 1 to entry: The term used in the UN regulations is "passing beam".

3.21**non-replaceable filament lamp**

filament lamp which cannot be removed from the device or luminaire

Note 1 to entry: Non-replaceable filament lamps are usually intended as components for integration into the luminaire or device by manufacturers. They are designed and intended to be indivisible parts of a lighting or light signalling device, or of parts or modules or units of such devices.

3.22**life B10**

constant of the Weibull distribution indicating the time during which 10 % of a number of the tested lamps of the same type have reached the end of their individual lives