BS EN 62639:2012

BSI Standards Publication

Fluorescent induction lamps – Performance specification

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National foreword

This British Standard is the UK implementation of EN 62639:2012. It is identical to IEC 62639:2012.

The UK participation in its preparation was entrusted by Technical Committee CPL/34, Lamps and Related Equipment, to Subcommittee CPL/34/1, Electric lamps.

A list of organizations represented on this committee can be obtained on request to its secretary.

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

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Compliance with a British Standard cannot confer immunity from legal obligations.

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EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 62639

April 2012

ICS 29.140.30

English version

Fluorescent induction lamps - Performance specification
(IEC 62639:2012)

Lampes fluorescentes à induction - Spécification de performance
(CEI 62639:2012)

Leuchtstoff-Induktionslampen - Anforderungen an die Arbeitsweise
(IEC 62639:2012)

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Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the CEN-CENELEC Management Centre or to any CENELEC member.

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CENELEC

European Committee for Electrotechnical Standardization
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Europäisches Komitee für Elektrotechnische Normung

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Foreword

The text of document 34A/1526/FDIS, future edition 1 of IEC 62639, prepared by SC 34A, "Lamps", of IEC/TC 34, "Lamps and related equipment" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN 62639:2012.

The following dates are fixed:

• latest date by which the document has to be implemented at national level by publication of an identical national standard or by endorsement	(dop)	2012-12-27
• latest date by which the national standards conflicting with the document have to be withdrawn	(dow)	2015-03-27

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Endorsement notice

The text of the International Standard IEC 62639:2012 was approved by CENELEC as a European Standard without any modification.

Annex ZA
(normative)

Normative references to international publications with their corresponding European publications

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.

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

Publication	Year	Title	EN/HD	Year
IEC 60081	1997	Double-capped fluorescent lamps - Performance specifications	EN 60081	1998
IEC 60598-1	-	Luminaires - Part 1: General requirements and tests	EN 60598-1	-
IEC 60929	-	AC and/or DC-supplied electronic control gear for tubular fluorescent lamps - Performance requirements	EN 60929	-
IEC 61347-2-3	-	Lamp controlgear - Part 2-3: Particular requirements for a.c. and/or d.c. supplied electronic control gear for fluorescent lamps	EN 61347-2-3	-
IEC 62532	2011	Fluorescent induction lamps - Safety specifications	EN 62532	2011

CONTENTS

INTRODUCTION

Performance standard IEC 62639 follows IEC 62532:2011-01, which is the safety standard for induction lamps.

Requirements are given on marking, dimensions, starting characteristics, electrical characteristics, photometric characteristics, lumen maintenance and life. Further, information is given for designing ballasts and luminaires.

The requirements are detailed by means of lamp data sheets, diagrammatic data sheets and maximum lamp outline sheets.

FLUORESCENT INDUCTION LAMPS – PERFORMANCE SPECIFICATION

1 Scope

This International Standard specifies the performance requirements for fluorescent induction lamps for general lighting purposes.

In this standard, the term “lamp” stands for “induction lamp”.

It may be expected that lamps which comply with this standard will start and operate satisfactorily at voltages between 92 % and 106 % of rated supply voltage and at an ambient air temperature between 10 °C and 50 °C, when operated with ballasts complying with IEC 60929 and IEC 61347-2-3, as far as applicable, and in a luminaire complying with IEC 60598-1.

NOTE For some lamps, additional information for ballast design is given for proper starting at an ambient air temperature of –15 °C.

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 60081:1997, *Double-capped fluorescent lamps – Performance specifications*

IEC 60598-1, *Luminaires – Part 1: General requirements and tests*

IEC 60929, *AC and/or DC-supplied electronic control gear for tubular fluorescent lamps – Performance requirements*

IEC 61347-2-3, *Lamp control gear – Part 2-3: Particular requirements for a.c. and/or d.c. supplied electronic control gear for fluorescent lamps*

IEC 62532:2011, *Fluorescent induction lamps – Safety specifications*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in IEC 62532 and IEC 60081 apply, together with the following.

3.1
ambient temperature
T_{amb}
average temperature of air or another medium in the vicinity of the lamp

3.2
stabilization period
time required after switching on a lamp to reach stable values of luminous flux or lamp voltage

Note 1 to entry: Requirements on luminous flux are given in 4.6 and on tolerance of luminous flux in Clause B.2.

3.3
reference ballast
special electronic ballast, which is specified by the design specification of manufacturer

It is designed for the purpose of providing comparison standards for use in testing ballasts, for the selection of reference lamps or for testing regular production lamps under standardized conditions. It is essentially characterized by the fact that, at its rated frequency, it has a stable voltage/current ratio which is relatively uninfluenced by variations in current, temperature and magnetic surroundings, as outlined in the relevant ballast standard.

[SOURCE: IEC 60050-845:1987, 845-08-36, modified]

3.4
life
<general term> time during which a lamp is operated until its failure

Note 1 to entry: Switch-off times are not regarded when calculating life.

3.5
nominal life
life (in hours) as declared by the manufacturer

It is published together with the switching cycle and failure rate on which it is based.

Note 1 to entry: Example for a short version: 12B10 (12 h switching cycle / 10 % failures).

4 Lamp requirements

4.1 General

A lamp, on which compliance with this standard is claimed, shall comply with the requirements of IEC 62532.

A lamp has to comply with further requirements or more stringent requirements, if they published by manufacturer.

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 requirements of the following subclauses.

The requirements and information given apply to 95 % of production.

NOTE The requirements and tolerances permitted by this standard correspond to the testing of a type test sample, submitted by the manufacturer for that purpose. In principle, this type test sample should consist of units having characteristics typical of the manufacturer's production and being as close to the production centre point values as possible.

It may be expected with the tolerances given in the standard that products manufactures in accordance with the type test sample will comply with the standard of the majority of production. Due to the production spread however, it is inevitable that there will sometimes be products outside the specified tolerances.

Measurements are carried out under reference conditions with values specified on the data sheets, if available. Except where otherwise specified in the annexes, lamps shall be tested in an ambient temperature of between 20 °C and 27 °C.

4.2 Marking

4.2.1 General

In addition to the marking requirements of IEC 62532, the following is specified.

4.2.2 Correlated colour temperature (CCT) and colour rendering index (R_a)

The value of the correlated colour temperature and colour rendering index shall be provided on the lamp itself or on the packaging (under consideration). The value representing CCT and R_a may take the form as given in the International Lamp Coding System (ILCOS).

NOTE An R_a of 80 and a CCT of 3 000 K may be combined in the abbreviation “830”.

4.2.3 Polarity

The polarity shall be identified by marking the terminals (+, -). Other means of identifying are possible instead, see Clause B.2.

4.3 Dimensions

The dimensions of a lamp shall comply with the values specified on the relevant lamp data sheet.

Compliance: By measuring with callipers or equivalent.

4.4 Starting characteristics

A lamp shall start fully within the time specified on the relevant lamp data sheet and remain alight.

Compliance: Visual inspection to verify that lamps are starting and remain alight. If the lamp has achieved breakdown at $\leq U_{min}$ and stayed alight, it has passed the test.

Conditions and method of test are given in Annex A.

4.5 Electrical characteristics

Requirements for lamp voltage and power are given below.

a) The initial reading of the voltage at the lamp terminals shall comply with the values specified on the relevant lamp data sheet.
b) The initial reading of the power dissipated by a lamp shall not exceed the rated power specified on the relevant lamp data sheet by more than 5 %.

Conditions and method of test are given in Annex B.

4.6 Photometric characteristics

Requirements for luminous flux, chromaticity coordinates and colour rendering index are given below.

a) The initial reading of the luminous flux of a lamp shall be not less than 90 % and the average of a batch shall be not less than 95 % (under consideration) of the declared value.
b) If specified, the initial reading of the chromaticity co-ordinates x and y of a lamp shall be within 5 SDCM (standard deviation of colour matching) from the rated values.
c) The initial reading of the general colour rendering index R_a of a lamp shall be not less than the rated value decreased by three.

Conditions and method of test are given in Annex B.

4.7 Lumen maintenance

The lumen maintenance of a lamp, at any time in its life, shall be not less than 90 % of the rated lumen maintenance value.

Conditions and method of test are given in Annex C.

4.8 Life

Requirements are provided by the lamp manufacturer.

5 Information for ballast design

Refer to the relevant lamp data sheet and to Annex D for information for ballast design.

6 Information for luminaire design

Refer to the relevant lamp data sheet and to Annex E for information for luminaire design. The regional requirements on EMC should be regarded.

7 Data sheets

7.1 Diagrammatic data sheets for location of lamp dimensions

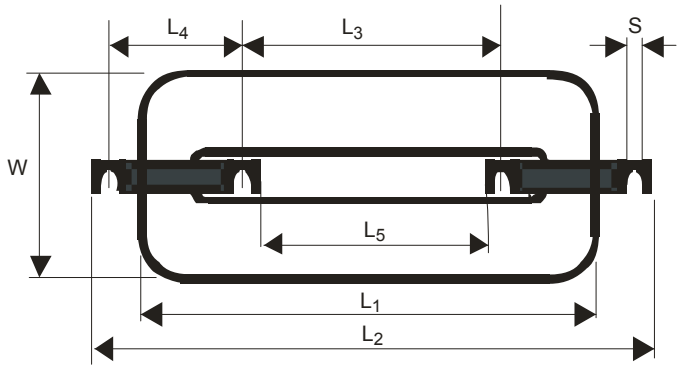
62639-IEC-01	rectangular shaped lamps
62639-IEC-02	circular shaped lamps
62639-IEC-03	A110, A130 and A140 shaped lamps
62639-IEC-04	G95 shaped lamps
62639-IEC-05	PS110 shaped lamps
62639-IEC-06	PS180 shaped lamps
62639-IEC-07	R160 shaped lamps
62639-IEC-08	T85 shaped lamps

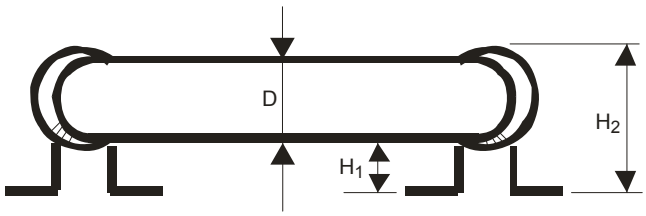
INDUCTION LAMPS

DIAGRAMMATIC DATA SHEET FOR LOCATION OF LAMP DIMENSIONS

Rectangular shaped, externally coupled, a-type

These drawings are intended only to indicate dimensions to be controlled and are to be used in conjunction with the relevant lamp standard sheets.





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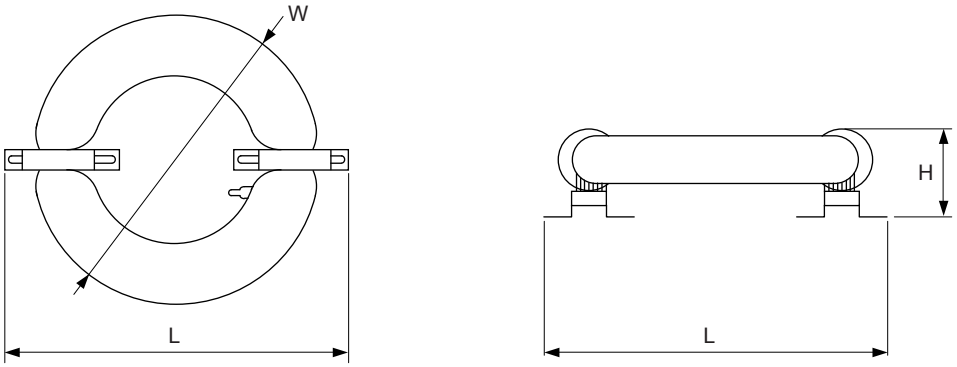
62639-IEC-01-1

INDUCTION LAMPS

DIAGRAMMATIC DATA SHEET FOR LOCATION OF LAMP DIMENSIONS

Circular shaped, externally coupled, b-type

These drawings are intended only to indicate dimensions to be controlled and are to be used in conjunction with the relevant lamp standard sheets.



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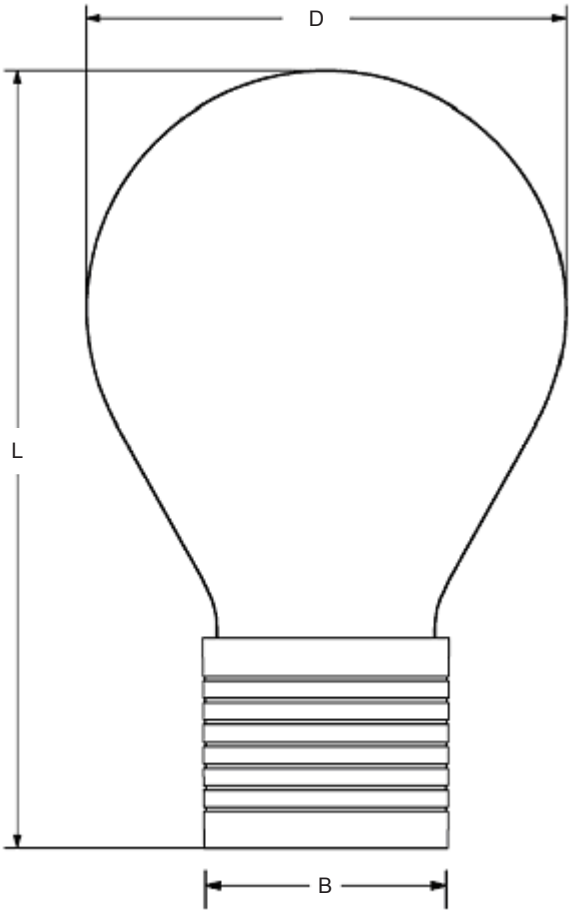
62639-IEC-02-1

INDUCTION LAMPS

DIAGRAMMATIC DATA SHEET FOR LOCATION OF LAMP DIMENSIONS

A110, A130 and A140 shaped, internally coupled, a-type

These drawings are intended only to indicate dimensions to be controlled and are to be used in conjunction with the relevant lamp standard sheets.



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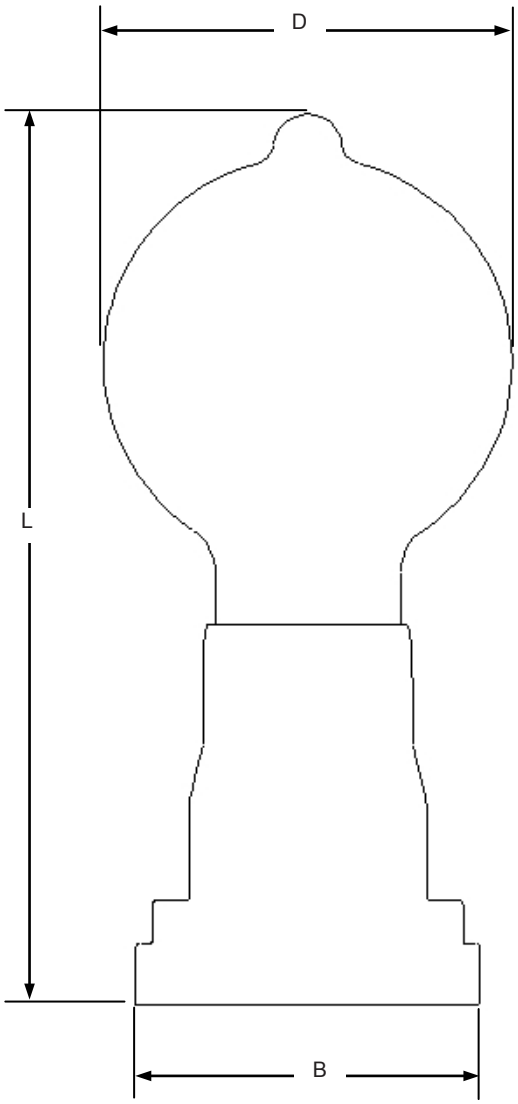
62639-IEC-03-1

INDUCTION LAMPS

DIAGRAMMATIC DATA SHEET FOR LOCATION OF LAMP DIMENSIONS

G95 shaped, internally coupled, b-type

These drawings are intended only to indicate dimensions to be controlled and are to be used in conjunction with the relevant lamp standard sheets.



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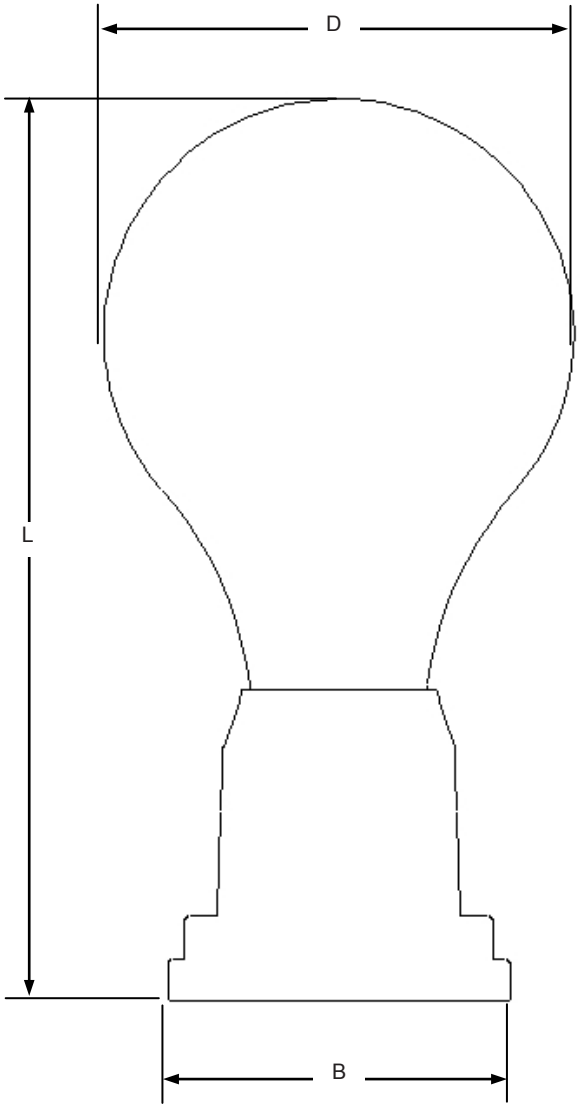
62639-IEC-04-1

INDUCTION LAMPS

DIAGRAMMATIC DATA SHEET FOR LOCATION OF LAMP DIMENSIONS

PS110 shaped, internally coupled, b-type

These drawings are intended only to indicate dimensions to be controlled and are to be used in conjunction with the relevant lamp standard sheets.



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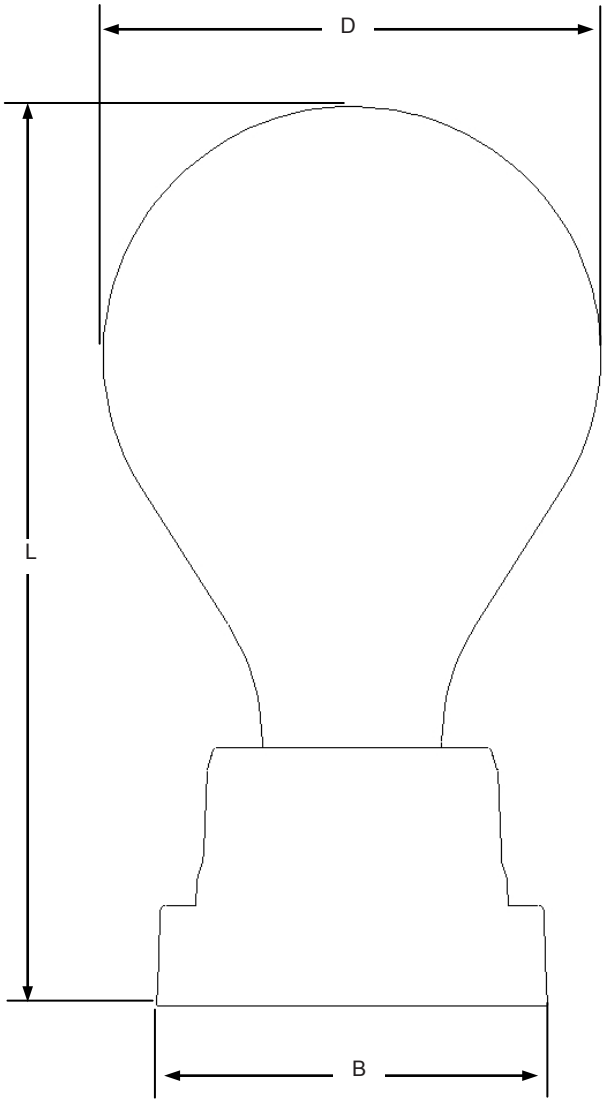
62639-IEC-05-1

INDUCTION LAMPS

DIAGRAMMATIC DATA SHEET FOR LOCATION OF LAMP DIMENSIONS

PS180 shaped, internally coupled, b-type

These drawings are intended only to indicate dimensions to be controlled and are to be used in conjunction with the relevant lamp standard sheets.



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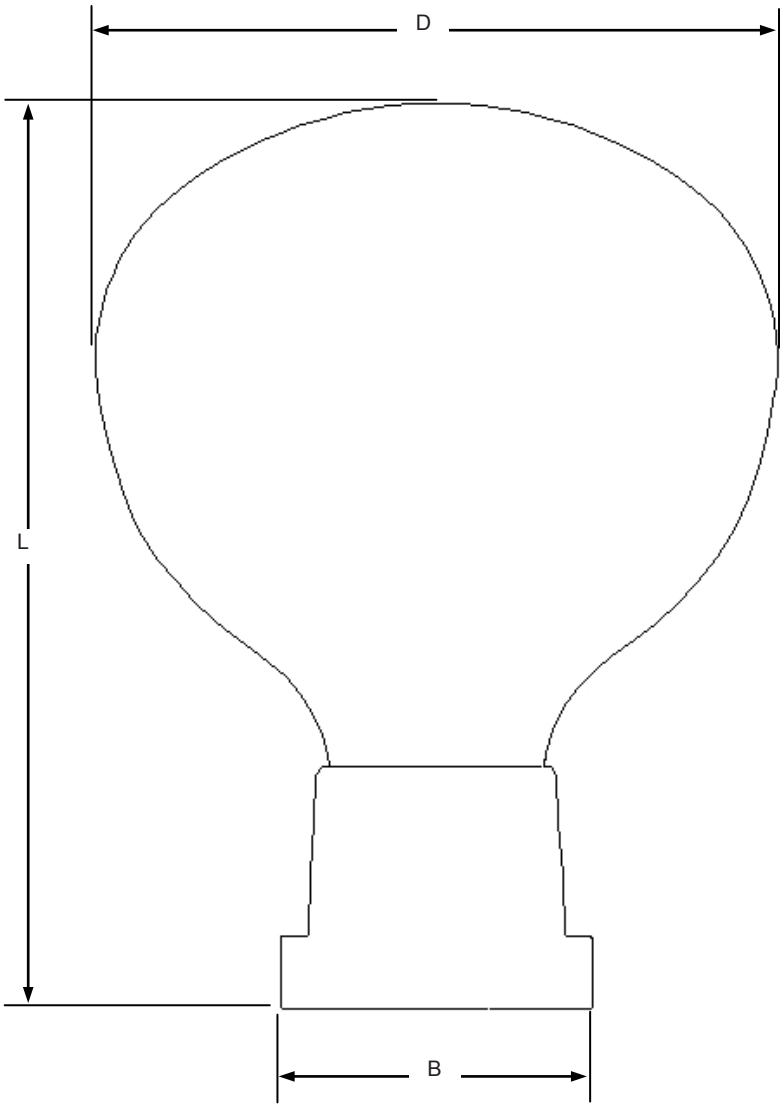
62639-IEC-06-1

INDUCTION LAMPS

DIAGRAMMATIC DATA SHEET FOR LOCATION OF LAMP DIMENSIONS

R160 shaped, internally coupled, b-type

These drawings are intended only to indicate dimensions to be controlled and are to be used in conjunction with the relevant lamp standard sheets.



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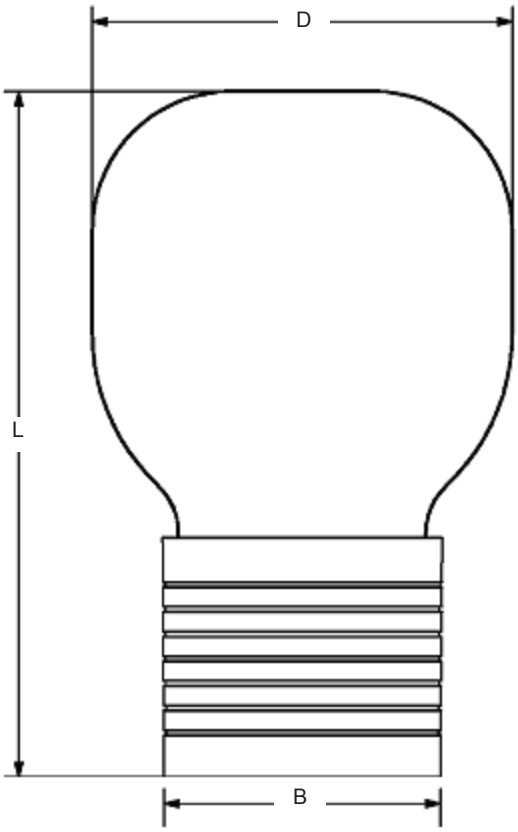
62639-IEC-07-1

INDUCTION LAMPS

DIAGRAMMATIC DATA SHEET FOR LOCATION OF LAMP DIMENSIONS

T85 shaped, internally coupled, a-type

These drawings are intended only to indicate dimensions to be controlled and are to be used in conjunction with the relevant lamp standard sheets.



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62639-IEC-08-1

7.2 Lamp data sheets

Lamp data sheets are in the order:

1) Shape: (a) round, elliptical, parabolic; (b) rectangular; (c) circular
2) Power, starting with the lowest power

Sheet-No 62639-IEC-	Power		Frequency	Shape	Energetic coupling
	Lamp rated	System nominal			
	W		kHz		
0035	30	35	135	G95	Internally b-type
0040	36	40	2 650	T85	Internally a-type
0050	50	55	135	PS110	Internally b-type
0055	47	55	2 650	T85	Internally a-type
0070	63	70	2 650	A110	Internally a-type
0085	78	85	2 650	A110	Internally a-type
0100	90	100	2 650	A130	Internally a-type
0150	135	150	2 650	A140	Internally a-type
0160	150	165	135	R160	Internally b-type
0165	150	165	2 650	A130	Internally a-type
0200	180	200	250	A140	Internally a-type
0260	240	260	135	PS180	Internally b-type
1070	70		250	rectangular	Externally a-type
1075	75		250	rectangular	Externally a-type
1080	80		230	rectangular	Externally a-type
1100	100		250	rectangular	Externally a-type
1105	100		230	rectangular	Externally a-type
1120	120		230	rectangular	Externally a-type
1150	150		250	rectangular	Externally a-type
1200	200		230	rectangular	Externally a-type
2080	80		230	circular	Externally b-type
2100	100		230	circular	Externally b-type
2120	120		230	circular	Externally b-type
2150	150		250	circular	Externally b-type
2200	200		250	circular	Externally b-type

	INDUCTION LAMP **DATA SHEET** **Internally b-type**	Page 1

ILCOS: FSGI-30-95/207

Nominal system power	W	35
Bulb shape		G95

Dimensions (mm)		
L (height)	D (diameter)	B (diameter lampbase)
207	95	80

Lamp electrical characteristics			
Frequency kHz	Rated power W	Rated voltage V	Starting time (max.) s
135	30	300	1

Test position: Mechanical interface down.

Information for ballast design			
Starting and operating characteristics; lamp substitution circuit, see Figures D.1c, D.2c and D.3c.			
Duration of ignition pulse	Δt_{min}	ms	40
Stop of ignition*	t_{max}	s	5
Ignition voltage	U_{min}	V_{peak}	1 600
Magnetising inductance of the 1 core at 25 °C	L_{em}	µH	164 ± 5 %
Resistance during operation	$R_{d\ op}$	Ω	1 400

Information for luminaire design			
Maximum lamp ambient temperature (for coupling purpose)	$t_{a\ max.}$	°C	60

* On-time 80 ms ± 40 ms, off-time 1 300 ms ± 700 ms. Repetition 3 times.

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	INDUCTION LAMP **DATA SHEET** **Internally a-type**	Page 1

ILCOS: not commercially available

Nominal system power	W	40
Bulb shape		T85

Dimensions (mm)		
L	D	B (diameter lamp cap)
150 ± 2	85 ± 1	58 ± 0,5

Lamp electrical characteristics			
Frequency kHz	Rated power W	Rated voltage V	Starting time (max.) s
2 650 ± 0,3 %	36	220 ± 20	0,5

Test position: Mechanical interface down.

Information for ballast design			
Starting characteristics; lamp substitution circuit for starting, see Figures D.1b and D.2b			
Duration of ignition pulse	Δt_{min}	ms	100
Stop of ignition	t_{max}	s	2
Ignition voltage	U_{min}	V_{peak}	1 500
Equivalent serial resistance @ 2,65 MHz	Q-factor		> 35
Inductivity @ 2,65 MHz (power coupler substitution circuit)	L_{PC}	µH	15 ± 0,5
Capacitance @ 8,0 MHz (power coupler substitution circuit)	C_{PC}	pF	56 ± 5
Operating characteristics; lamp substitution circuit for operating, see Figures D.1.b and D.3b			
Equivalent arc resistance @ 2,65 MHz (during operation)	*EAR*	Ω	205
Equivalent arc inductance EAL @ 2,65 MHz (during operation)	*EAL*	µH	9,0

Information for luminaire design			
Maximum lamp ambient temperature (for coupling purpose)	$t_{a\ max.}$	°C	60

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	INDUCTION LAMP **DATA SHEET** **Internally b-type**	Page 1

ILCOS: FSGI-50-110/213

Nominal system power	W	55
Bulb shape		PS110

Dimensions (mm)		
L (height)	D (diameter)	B (diameter lampbase)
213	110	80

Lamp electrical characteristics			
Frequency kHz	Rated power W	Rated voltage V	Starting time (max.) s
135	50	350	1

Test position: Mechanical interface down.

Information for ballast design			
Starting and operating characteristics; lamp substitution circuit, see Figures D.1c, D.2c and D.3c.			
Duration of ignition pulse	Δt_{min}	ms	40
Stop of ignition*	t_{max}	s	2
Ignition voltage	U_{min}	V_{peak}	1 600
Magnetising inductance of the 1 core at 25 °C	L_{em}	µH	158 ± 5 %
Resistance during operation	$R_{d\ op}$	Ω	700

Information for luminaire design			
Maximum lamp ambient temperature (for coupling purpose)	$t_{a\ max.}$	°C	50

* On-time 80 ms ± 40 ms, off-time 400 ms ± 300 ms. Repetition 3 times.

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	INDUCTION LAMP **DATA SHEET** **Internally a-type**	Page 1

ILCOS: FSI-55-146/85/56

Nominal system power	W	55
Bulb shape		T85

Dimensions (mm)		
L	D	B
146,5 ± 2,0	85 ± 1	56 ± 0,3

Lamp electrical characteristics			
Frequency kHz	Rated power W	Rated voltage V	Starting time (max.) s
2 650 ± 10 %	47 ± 5	120 ± 15	2

Test position: Mechanical interface down.

Information for ballast design			
Starting characteristics; lamp substitution circuit for starting, see Figures D.1b and D.2b			
Duration of ignition pulse	Δt_{min}	ms	100
Stop of ignition	t_{max}	s	2
Ignition voltage	U_{min}	V_{peak}	1 100
Equivalent serial resistance @ 2,65 MHz	Q-factor		> 35
Inductivity @ 2,65 MHz (power coupler substitution circuit)	L_{PC}	µH	19,5 ± 1,5
Capacitance @ 8,0 MHz (power coupler substitution circuit)	C_{PC}	pF	56 ± 6
Operating characteristics; lamp substitution circuit for operating, see Figures D.1b and D.3b			
Equivalent arc resistance @ 2,65 MHz (during operation)	*EAR*	Ω	209
Equivalent arc inductance EAL @ 2,6 5MHz (during operation)	*EAL*	µH	8,9

Information for luminaire design			
Maximum lamp ambient temperature (for coupling purpose)	$t_{a\ max.}$	°C	50

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	INDUCTION LAMP **DATA SHEET** **Internally a-type**	Page 1

ILCOS: not commercially available

Nominal system power	W	70
Bulb shape		A110

Dimensions (mm)		
L	D	B (diameter lamp cap)
182 ± 2	110 ± 1,5	58 ± 0,5

Lamp electrical characteristics			
Frequency kHz	Rated power W	Rated voltage V	Starting time (max.) s
2 650 ± 0,3 %	63	220 ± 20	0,5

Test position: Mechanical interface down.

Information for ballast design			
Starting characteristics; lamp substitution circuit for starting, see Figures D.1b and D.2b			
Duration of ignition pulse	Δt_{min}	ms	100
Stop of ignition	t_{max}	s	2
Ignition voltage	U_{min}	V_{peak}	1 500
Equivalent serial resistance @ 2,65 MHz	Q-factor		> 35
Inductivity @ 2,65 MHz (power coupler substitution circuit)	L_{PC}	µH	15 ± 0,5
Capacitance @ 8,0 MHz (power coupler substitution circuit)	C_{PC}	pF	56 ± 5
Operating characteristics; lamp substitution circuit for operating, see Figures D.1b and D.3b			
Equivalent arc resistance @ 2,65 MHz (during operation)	*EAR*	Ω	225
Equivalent arc inductance EAL @ 2,65 MHz (during operation)	*EAL*	µH	9,0

Information for luminaire design			
Maximum lamp ambient temperature (for coupling purpose)	$t_{a\ max.}$	°C	60

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	INDUCTION LAMP **DATA SHEET** **Internally a-type**	Page 1

ILCOS: FSI-85-186/110/56

Nominal system power	W	85
Bulb shape		A110

Dimensions (mm)		
L	D	B
186,5 ± 2,0	110 ± 1	56 ± 0,3

Lamp electrical characteristics			
Frequency kHz	Rated power W	Rated voltage V	Starting time (max.) s
2 650 ± 10 %	78 ± 8	180 ± 20	2

Test position: Mechanical interface down.

Information for ballast design			
Starting characteristics; lamp substitution circuit for starting, see Figures D.1b and D.2b			
Duration of ignition pulse	Δt_{min}	ms	100
Stop of ignition	t_{max}	s	2
Ignition voltage	U_{min}	V_{peak}	1 100
Equivalent serial resistance @ 2,65 MHz	Q-factor		> 35
Inductivity @ 2,65 MHz (power coupler substitution circuit)	L_{PC}	µH	19,5 ± 1,5
Capacitance @ 8,0 MHz (power coupler substitution circuit)	C_{PC}	pF	56 ± 6
Operating characteristics; lamp substitution circuit for operating, see Figures D.1b and D.3b			
Equivalent arc resistance @ 2,65 MHz (during operation)	*EAR*	Ω	232
Equivalent arc inductance EAL @ 2,65 MHz (during operation)	*EAL*	µH	10,6

Information for luminaire design			
Maximum lamp ambient temperature (for coupling purpose)	$t_{a\ max.}$	°C	50

Texte français au verso French text overleaf	**62639-IEC-0085-1**	

	INDUCTION LAMP **DATA SHEET** **Internally a-type**	Page 1

ILCOS: not commercially available

Nominal system power	W	100
Bulb shape		A130

Dimensions (mm)		
L	D	B (diameter lamp cap)
207 ± 2	130 ± 1,5	58 ± 0,5

Lamp electrical characteristics			
Frequency kHz	Rated power W	Rated voltage V	Starting time (max.) s
2 650 ± 0,3 %	90	220 ± 20	0,5

Test position: Mechanical interface down.

Information for ballast design			
Starting characteristics; lamp substitution circuit for starting, see Figures D.1b and D.2b			
Duration of ignition pulse	Δt_{min}	ms	100
Stop of ignition	t_{max}	s	2
Ignition voltage	U_{min}	V_{peak}	1 500
Equivalent serial resistance @ 2,65 MHz	Q-factor		> 35
Inductivity @ 2,65 MHz (power coupler substitution circuit)	L_{PC}	µH	14 ± 0,5
Capacitance @ 8,0 MHz (power coupler substitution circuit)	C_{PC}	pF	56 ± 5
Operating characteristics; lamp substitution circuit for operating, see Figures D.1b and D.3b			
Equivalent arc resistance @ 2,65 MHz (during operation)	*EAR*	Ω	225
Equivalent arc inductance EAL @ 2,65 MHz (during operation)	*EAL*	µH	9,0

Information for luminaire design			
Maximum lamp ambient temperature (for coupling purpose)	$t_{a\ max.}$	°C	60

Texte français au verso French text overleaf	**62639-IEC-0100-1**	

	INDUCTION LAMP **DATA SHEET** **Internally a-type**	Page 1

ILCOS: not commercially available

Nominal system power	W	150
Bulb shape		A140

Dimensions (mm)		
L	D	B (diameter lamp cap)
233 ± 2	140 ± 2	67 ± 0,5

Lamp electrical characteristics			
Frequency kHz	Rated power W	Rated voltage V	Starting time (max.) s
2 650 ± 0,3 %	135	220 ± 20	1

Test position: Mechanical interface down.

Information for ballast design			
Starting characteristics; lamp substitution circuit for starting, see Figures D.1b and D.2b			
Duration of ignition pulse	Δt_{min}	ms	100
Stop of ignition	t_{max}	s	2
Ignition voltage	U_{min}	V_{peak}	1 500
Equivalent serial resistance @ 2,65 MHz	Q-factor		> 35
Inductivity @ 2,65 MHz (power coupler substitution circuit)	L_{PC}	µH	14 ± 0,5
Capacitance @ 8,0 MHz (power coupler substitution circuit)	C_{PC}	pF	65 ± 5
Operating characteristics; lamp substitution circuit for operating, see Figures D.1b and D.3b			
Equivalent arc resistance @ 2,65 MHz (during operation)	*EAR*	Ω	200
Equivalent arc inductance EAL @ 2,65 MHz (during operation)	*EAL*	µH	9,0

Information for luminaire design			
Maximum lamp ambient temperature (for coupling purpose)	$t_{a\ max.}$	°C	60

Texte français au verso French text overleaf	**62639-IEC-0150-1**	

	INDUCTION LAMP **DATA SHEET** **Internally b-type**	Page 1

ILCOS: FSGI-150-160/213

Nominal system power	W	165
Bulb shape		R160

Dimensions (mm)		
L (height)	D (diameter)	B (diameter lampbase)
213	160	73,4

Lamp electrical characteristics			
Frequency kHz	Rated power W	Rated voltage V	Starting time (max.) s
135	150	450	1

Test position: Mechanical interface down.

Information for ballast design			
Starting and operating characteristics; lamp substitution circuit, see Figures D.1c, D.2c and D.3c.			
Duration of ignition pulse	Δt_{min}	ms	80
Stop of ignition*	t_{max}	s	8
Ignition voltage	U_{min}	V_{peak}	1 600
Magnetising inductance of the 1 core at 25 °C	L_{em}	µH	160 ± 7 %
Resistance during operation	$R_{d\ op}$	Ω	525

Information for luminaire design			
Maximum lamp ambient temperature (for coupling purpose)	$t_{a\ max.}$	°C	50

* On-time 100 ms ± 20 ms, off-time 500 ms ± 200 ms. Repetition 3 to10 times.

Texte français au verso French text overleaf	**62639-IEC-0160-1**	

	INDUCTION LAMP **DATA SHEET** **Internally a-type**	Page 1

ILCOS: not commercially available

Nominal system power	W	165
Bulb shape		A130

Dimensions (mm)		
L	D	B (cap diameter)
210,5 ± 3,0	130 ± 1	56 ± 0,3

Lamp electrical characteristics			
Frequency kHz	Rated power W	Rated voltage V	Starting time (max.) s
2 650 ± 10 %	150 ± 15	230 ± 50	2

Test position: Mechanical interface down.

Information for ballast design			
Starting characteristics; lamp substitution circuit for starting, see Figures D.1b and D.2b			
Duration of ignition pulse	Δt_{min}	ms	100
Stop of ignition	t_{max}	s	2
Ignition voltage	U_{min}	V_{peak}	1 100
Equivalent serial resistance @ 2,65 MHz	Q-factor		> 35
Inductivity @ 0,10 MHz (power coupler substitution circuit)	L_{PC}	µH	11,5 ± 0,4
Capacitance @ 8,0 MHz (power coupler substitution circuit)	C_{PC}	pF	70 ± 4
Operating characteristics; lamp substitution circuit for operating, see Figures D.1b and D.3b			
Equivalent arc resistance @ 2,65 MHz (during operation)	*EAR*	Ω	172
Equivalent arc inductance EAL @ 2,65 MHz (during operation)	*EAL*	µH	9,2

Information for luminaire design			
Maximum lamp ambient temperature (for coupling purpose)	$t_{a\ max.}$	°C	50

NOTE In Korea, lamps with different dimensions (L = 233 mm, D = 140 mm, B = 67 mm, C = 63 mm) are in the market. Tolerances are assumed the same as for the standard lamp.

Texte français au verso French text overleaf	**62639-IEC-0165-1**	

	INDUCTION LAMP **DATA SHEET** **Internally a-type**	Page 1

ILCOS: not commercially available

Nominal system power	W	200
Bulb shape		A140

Dimensions (mm)		
L	D	B (cap diameter)
233 ± 2	140 ± 2	67 ± 0,5

Lamp electrical characteristics			
Frequency kHz	Rated power W	Rated voltage V	Starting time (max.) s
250 ± 0,3 %	180	220 ± 20	2

Test position: Mechanical interface down.

Information for ballast design			
Starting characteristics; lamp substitution circuit for starting, see Figures D.1b and D.2b			
Duration of ignition pulse	Δt_{min}	ms	50
Stop of ignition	t_{max}	s	2
Ignition voltage	U_{min}	V_{peak}	2 000
Equivalent serial resistance @ 2,65 MHz	Q-factor		-
Inductivity @ 0,10 MHz (power coupler substitution circuit)	L_{PC}	µH	-
Capacitance @ 8,0 MHz (power coupler substitution circuit)	C_{PC}	pF	-
Operating characteristics; lamp substitution circuit for operating, see Figures D.1b and D.3b			
Equivalent arc resistance @ 2,65 MHz (during operation)	*EAR*	Ω	-
Equivalent arc inductance EAL @ 2,65 MHz (during operation)	*EAL*	µH	-

Information for luminaire design			
Maximum lamp ambient temperature (for coupling purpose)	$t_{a\ max.}$	°C	60

Texte français au verso French text overleaf	**62639-IEC-0200-1**	

	INDUCTION LAMP **DATA SHEET** **Internally b-type**	Page 1

ILCOS: FSGI-240-180/326

Nominal system power	W	260
Bulb shape		PS180

Dimensions (mm)		
L (height)	D (diameter)	B (diameter lampbase)
325,5	180	140

Lamp electrical characteristics			
Frequency kHz	Rated power W	Rated voltage V	Starting time (max.) s
135	240	350	1

Test position: Mechanical interface down.

Information for ballast design			
Starting and operating characteristics; lamp substitution circuit, see Figures D.1c, D.2c and D.3c			
Duration of ignition pulse	Δt_{min}	ms	30
Stop of ignition*	t_{max}	s	7
Ignition voltage	U_{min}	V_{peak}	1 600
Magnetising inductance of the 1 core at 25 °C	L_{em}	µH	194 ± 7 %
Resistance during operation	$R_{d\ op}$	Ω	320

Information for luminaire design			
Maximum lamp ambient temperature (for coupling purpose)	$t_{a\ max.}$	°C	50

* On-time 50 ms ± 20 ms, off-time 500 ms ± 200 ms. Repetition 3 to 10 times.

Texte français au verso French text overleaf	**62639-IEC-0260-1**	

	INDUCTION LAMP **DATA SHEET** **Externally a-type**	Page 1

ILCOS: FSI-70-54/137,5/250

Nominal lamp power	W	70
Bulb shape		Rectangular

Dimensions (mm)									
L_1	L_2	L_3	L_4	L_5	W	D	S	H_1	H_2
250±1,2	max.315	129,5±3,7	82,0±2,7	min.105	137,5±1,5	54±1	5,1±0,2	≥10	73±2

Lamp electrical characteristics				
Frequency kHz	Rated power W	Rated voltage V	Rated current A	Starting time (max.) s
250 ± 25	72 ± 2,9	145 ± 5	0,52	2

Test position: horizontal.

Information for ballast design			
Starting and operating characteristics; lamp substitution circuit, see Figure D.1a, D.2a and D.3a			
Duration of ignition pulse	Δt_{min}	ms	50
Stop of ignition	t_{max}	s	2
Ignition voltage	U_{min}	$V_{r.m.s.}$	800
Magnetising inductance of the 2 cores at 25 °C	L_{em}	μH	500 ± 28 %
Resistance during operation	$R_{d\ op}$	Ω	300

Information for luminaire design			
Maximum lamp ambient temperature at start (for coupling purpose)	$t_{a\ max.}$	°C	50

NOTE The magnetising inductance during operation at –40 °C to 150 °C can be 200 μH to 1 500 μH.

Texte français au verso French text overleaf	**62639-IEC-1070-1**	

	INDUCTION LAMP **DATA SHEET** **Externally a-type**	Page 1

ILCOS: not commercially available

Nominal lamp power	W	75
Bulb shape		Rectangular

Dimensions (mm)									
L_1	L_2	L_3	L_4	L_5	W	D	S	H_1	H_2
200	263	78	83	62	133	52	5	14	74

Lamp electrical characteristics				
Frequency kHz	Rated power W	Rated voltage V	Rated current A	Starting time (max.) s
250 ± 1 %	75 ± 5	130	-	2

Test position: unknown

Information for ballast design			
Starting and operating characteristics; lamp substitution circuit, see Figures D.1a, D.2a and D.3a			
Duration of ignition pulse	Δt_{min}	ms	50
Stop of ignition	t_{max}	s	2
Ignition voltage	U_{min}	V_{peak}	1 300
Magnetising inductance of the 2 cores at 25 °C	L_{em}	µH	450 ± 25 %
Resistance during operation	$R_{d\,op}$	Ω	230

Information for luminaire design			
Maximum lamp ambient temperature at start (for coupling purpose)	$t_{a\,max.}$	°C	60

NOTE The magnetising inductance during operation at –40 °C to 150 °C is unknown.

Texte français au verso French text overleaf	**62639-IEC-1075-1**	

	INDUCTION LAMP **DATA SHEET** **Externally a-type**	Page 1

ILCOS: not commercially available

Nominal lamp power	W	80
Bulb shape		Rectangular

Dimensions (mm)									
L_1	L_2	L_3	L_4	L_5	W	D	S	H_1	H_2
-	287	-	-	-	145	-	-	-	95

Lamp electrical characteristics				
Frequency kHz	Rated power W	Rated voltage V	Rated current A	Starting time (max.) s
230 ± 1 %	80 ± 5	135	0,6	0,1

Test position: unknown

Information for ballast design			
Starting and operating characteristics; lamp substitution circuit, see Figure D.1a, D.2a and D.3a			
Duration of ignition pulse	Δt_{min}	ms	50
Stop of ignition	t_{max}	s	2
Ignition voltage	U_{min}	V_{peak}	1 030
Magnetising inductance of the 2 cores at 25 °C	L_{em}	µH	450 ± 25 %
Resistance during operation	$R_{d\,op}$	Ω	250

Information for luminaire design			
Maximum lamp ambient temperature at start (for coupling purpose)	$t_{a\,max.}$	°C	60

NOTE The magnetising inductance during operation at –40 °C to 150 °C is unknown.

Texte français au verso French text overleaf	**62639-IEC-1080-1**	

	INDUCTION LAMP **DATA SHEET** **Externally a-type**	Page 1

ILCOS: FSI-100-54/137,5/250

Nominal lamp power	W	100
Bulb shape		Rectangular

Dimensions (mm)									
L_1	L_2	L_3	L_4	L_5	W	D	S	H_1	H_2
250±1,2	≤315	129,5±3,7	82,0±2,7	≥105	137,5±1,5	54±1	5,1±0,2	≥10	73±2

Lamp electrical characteristics					
Ballast type	Frequency kHz	Rated power W	Rated voltage V	Rated current A	Starting time (max.) s
100 W	250 ± 25	96 ± 3,8	195 ± 7	0,52	2
150 W	250 ± 25	138 ± 5,5	173 ± 6,0	0,832	2

Test position: horizontal.

Information for ballast design			
Starting and operating characteristics; lamp substitution circuit, see Figure D.1a, D.2a and D.3a			
Duration of ignition pulse	Δt_{min}	ms	50
Stop of ignition	t_{max}	s	2
Ignition voltage	U_{min}	$V_{r.m.s.}$	800
Magnetising inductance of the 2 cores at 25 °C	L_{em}	μH	500 ± 28 %
Resistance during operation, 100 W type ballast	$R_{d\ op}$	Ω	412
Resistance during operation, 150 W type ballast	$R_{d\ op}$	Ω	221

Information for luminaire design			
Maximum lamp ambient temperature at start (for coupling purpose)	$t_{a\ max.}$	°C	50

NOTE The magnetising inductance during operation at –40 °C to 150 °C can be 200 μH to 1 500 μH.

Texte français au verso French text overleaf	**62639-IEC-1100-1**	

	INDUCTION LAMP **DATA SHEET** **Externally a-type**	Page 1

ILCOS: not commercially available

Nominal lamp power	W	100
Bulb shape		Rectangular

Dimensions (mm)									
L_1	L_2	L_3	L_4	L_5	W	D	S	H_1	H_2
250 ± 1,2	313	129,5 ± 3,7	82,0 ± 2,7	112	145	53	5,1 ± 0,2	14	95

Lamp electrical characteristics				
Frequency kHz	Rated power W	Rated voltage V	Rated current A	Starting time (max.) s
230 ± 10 %	100 ± 7	145	0,7	2

Test position: unknown

Information for ballast design			
Starting and operating characteristics; lamp substitution circuit, see Figure D.1a, D.2a and D.3a			
Duration of ignition pulse	Δt_{min}	ms	50
Stop of ignition	t_{max}	s	2
Ignition voltage	U_{min}	V_{peak}	1 500
Magnetising inductance of the 2 cores at 25 °C	L_{em}	µH	500 ± 28 %
Resistance during operation	$R_{d\ op}$	Ω	400 ± 15

Information for luminaire design			
Maximum lamp ambient temperature at start (for coupling purpose)	$t_{a\ max.}$	°C	50

NOTE The magnetising inductance during operation at –40 °C to 150 °C is unknown.

Texte français au verso French text overleaf	**62639-IEC-1105-1**	

	INDUCTION LAMP **DATA SHEET** **Externally a-type**	Page 1

ILCOS: not commercially available

Nominal lamp power	W	120
Bulb shape		Rectangular

Dimensions (mm)									
L_1	L_2	L_3	L_4	L_5	W	D	S	H_1	H_2
-	357	-	-	-	143	-	-	-	95

Lamp electrical characteristics				
Frequency kHz	Rated power W	Rated voltage V	Rated current A	Starting time (max.) s
230 ± 1 %	120 ± 8	165	0,68	0,1

Test position: unknown

Information for ballast design			
Starting and operating characteristics; lamp substitution circuit, see Figure D.1a, D.2a and D.3a			
Duration of ignition pulse	Δt_{min}	ms	50
Stop of ignition	t_{max}	s	2
Ignition voltage	U_{min}	V_{peak}	1 200
Magnetising inductance of the 2 cores at 25 °C	L_{em}	µH	450 ± 25 %
Resistance during operation	$R_{d\ op}$	Ω	190

Information for luminaire design			
Maximum lamp ambient temperature at start (for coupling purpose)	$t_{a\ max.}$	°C	60

NOTE The magnetising inductance during operation at –40 °C to 150 °C is unknown.

Texte français au verso French text overleaf	**62639-IEC-1120-1**	

	INDUCTION LAMP **DATA SHEET** **Externally a-type**	Page 1

ILCOS: FSI-150-54/137,5/350

Nominal lamp power	W	150
Bulb shape		Rectangular

Dimensions (mm)*									
L_1	L_2	L_3	L_4	L_5	W	D	S	H_1	H_2
350±1,2	≤415	229,5±3,7	82,0±2,7	≥205	137,5±1,5	54±1	5,1±0,2	≥10	73±2

Lamp electrical characteristics				
Frequency kHz	Rated power W	Rated voltage* V	Rated current A	Starting time (max.) s
250 ± 25	144 ± 5,8	182 ± 6,5	0,832	2

Test position: horizontal.

Information for ballast design			
Starting and operating characteristics; lamp substitution circuit, see Figure D.1a, D.2a and D.3a			
Duration of ignition pulse	Δt_{min}	ms	50
Stop of ignition	t_{max}	s	2
Ignition voltage*	U_{min}	$V_{r.m.s.}$	1 000
Magnetising inductance of the 2 cores at 25 °C	L_{em}	μH	500 ± 28 %
Resistance during operation*	$R_{d\ op}$	Ω	235

Information for luminaire design			
Maximum lamp ambient temperature at start (for coupling purpose)	$t_{a\ max.}$	°C	50

NOTE The magnetising inductance during operation at –40 °C to 150 °C can be 200 μ to 1 500 μH.

* In Korea, W = 143 mm, H2 = 95 mm; rated voltage = 170 V. Tolerances are not available. Required ignition voltage 2 200 V_{peak} and $R_{d\ op}$ = 250 Ω.

Texte français au verso French text overleaf	**62639-IEC-1150-1**	

	INDUCTION LAMP **DATA SHEET** **Externally a-type**	Page 1

ILCOS: not commercially available

Nominal lamp power	W	200
Bulb shape		Rectangular

Dimensions (mm)									
L_1	L_2	L_3	L_4	L_5	W	D	S	H_1	H_2
425	495	282	98	262	148	58	5	22	90

Lamp electrical characteristics				
Frequency kHz	Rated power W	Rated voltage V	Rated current A	Starting time (max.) s
230 ± 10 %	200 ± 13	205	0,98	2

Test position: unknown

Information for ballast design			
Starting and operating characteristics; lamp substitution circuit, see Figure D.1a, D.2a and D.3a			
Duration of ignition pulse	Δt_{min}	ms	50
Stop of ignition	t_{max}	s	2
Ignition voltage	U_{min}	$V_{r.m.s.}$	2 200
Magnetising inductance of the 2 cores at 25 °C	L_{em}	µH	450 ± 25
Resistance during operation	$R_{d\ op}$	Ω	200

Information for luminaire design			
Maximum lamp ambient temperature at start (for coupling purpose)	$t_{a\ max.}$	°C	60

NOTE The magnetising inductance during operation at –40 °C to 150 °C is unknown.

Texte français au verso French text overleaf	**62639-IEC-1200-1**	

	INDUCTION LAMP **DATA SHEET** **Externally b-type**	Page 1

ILCOS: not commercially available

Nominal lamp power	W	80
Bulb shape		Circular

Dimensions (mm)		
H	L	W
93	232	217

Lamp electrical characteristics				
Frequency kHz	Rated power W	Rated voltage V	Rated current A	Starting time (max.) s
230	80	135	0,6	0,1

Test position: unknown

Information for ballast design			
Starting and operating characteristics; lamp substitution circuit, see Figure D.1a, D.2a and D.3a			
Duration of ignition pulse	Δt_{min}	ms	50
Stop of ignition	t_{max}	s	2
Ignition voltage	U_{min}	$V_{r.m.s.}$	2 200
Magnetising inductance of the 2 cores at 25 °C	L_{em}	μH	450 ± 25
Resistance during operation	$R_{d\ op}$	Ω	250

Information for luminaire design			
Maximum lamp ambient temperature at start (for coupling purpose)	$t_{a\ max.}$	°C	60

NOTE The magnetising inductance during operation at –40 °C to 150 °C is unknown.

Texte français au verso French text overleaf	**62639-IEC-2080-1**	

	INDUCTION LAMP **DATA SHEET** **Externally b-type**	Page 1

ILCOS: not commercially available

Nominal lamp power	W	100
Bulb shape		Circular

Dimensions (mm)		
H	L	W
93	232	217

Lamp electrical characteristics				
Frequency kHz	Rated power W	Rated voltage V	Rated current A	Starting time (max.) s
230	100	144	0,7	0,1

Test position: unknown

Information for ballast design			
Starting and operating characteristics; lamp substitution circuit, see Figure D.1a, D.2a and D.3a			
Duration of ignition pulse	Δt_{min}	ms	50
Stop of ignition	t_{max}	s	2
Ignition voltage	U_{min}	$V_{r.m.s.}$	2 200
Magnetising inductance of the 2 cores at 25 °C	L_{em}	μH	450 ± 25
Resistance during operation	$R_{d\ op}$	Ω	250

Information for luminaire design			
Maximum lamp ambient temperature at start (for coupling purpose)	$t_{a\ max.}$	°C	60

NOTE The magnetising inductance during operation at –40 °C to 150 °C is unknown.

Texte français au verso French text overleaf	**62639-IEC-2100-1**	

	INDUCTION LAMP **DATA SHEET** **Externally b-type**	Page 1

ILCOS: not commercially available

Nominal lamp power	W	120
Bulb shape		Circular

Dimensions (mm)		
H	L	W
93	232	278

Lamp electrical characteristics				
Frequency kHz	Rated power W	Rated voltage V	Rated current A	Starting time (max.) s
230	120	165	0,68	0,1

Test position: unknown

Information for ballast design			
Starting and operating characteristics; lamp substitution circuit, see Figure D.1a, D.2a and D.3a			
Duration of ignition pulse	Δt_{min}	ms	50
Stop of ignition	t_{max}	s	2
Ignition voltage	U_{min}	$V_{r.m.s.}$	2 200
Magnetising inductance of the 2 cores at 25 °C	L_{em}	μH	450 ± 25
Resistance during operation	$R_{d\ op}$	Ω	250

Information for luminaire design			
Maximum lamp ambient temperature at start (for coupling purpose)	$t_{a\ max.}$	°C	60

NOTE The magnetising inductance during operation at –40 °C to 150 °C is unknown.

Texte français au verso French text overleaf	**62639-IEC-2120-1**	

	INDUCTION LAMP **DATA SHEET** **Externally b-type**	Page 1

ILCOS: not commercially available

Nominal lamp power	W	150
Bulb shape		Circular

Dimensions (mm)		
H	L	W
100	355	300

Lamp electrical characteristics				
Frequency kHz	Rated power W	Rated voltage V	Rated current A	Starting time (max.) s
250 ± 10 %	150 ± 10	180	0,83	2

Test position: unknown

Information for ballast design			
Starting and operating characteristics; lamp substitution circuit, see Figure D.1a, D2a and D.3a			
Duration of ignition pulse	Δt_{min}	ms	50
Stop of ignition	t_{max}	s	2
Ignition voltage	U_{min}	$V_{r.m.s.}$	2 200
Magnetising inductance of the 2 cores at 25 °C	L_{em}	μH	450 ± 25
Resistance during operation	$R_{d\ op}$	Ω	250

Information for luminaire design			
Maximum lamp ambient temperature at start (for coupling purpose)	$t_{a\ max.}$	°C	60

NOTE The magnetising inductance during operation at –40 °C to 150 °C is unknown.

Texte français au verso French text overleaf	**62639-IEC-2150-1**	

	INDUCTION LAMP **DATA SHEET** **Externally b-type**	Page 1

ILCOS: not commercially available

Nominal lamp power	W	200
Bulb shape		Circular

Dimensions (mm)		
H	L	W
110	380	354

Lamp electrical characteristics				
Frequency kHz	Rated power W	Rated voltage V	Rated current A	Starting time (max.) s
250 ± 10 %	200 ± 17	205	0,98	2

Test position: unknown

Information for ballast design			
Starting and operating characteristics; lamp substitution circuit, see Figure D.1a, D.2a and D.3a			
Duration of ignition pulse	Δt_{min}	ms	50
Stop of ignition	t_{max}	s	2
Ignition voltage	U_{min}	$V_{r.m.s.}$	2 200
Magnetising inductance of the 2 cores at 25 °C	L_{em}	μH	450 ± 25
Resistance during operation	$R_{d\ op}$	Ω	200

Information for luminaire design			
Maximum lamp ambient temperature at start (for coupling purpose)	$t_{a\ max.}$	°C	60

NOTE The magnetising inductance during operation at –40 °C to 150 °C is unknown.

Texte français au verso French text overleaf	**62639-IEC-2200-1**	

7.3 Maximum outline sheets

See Annex E.

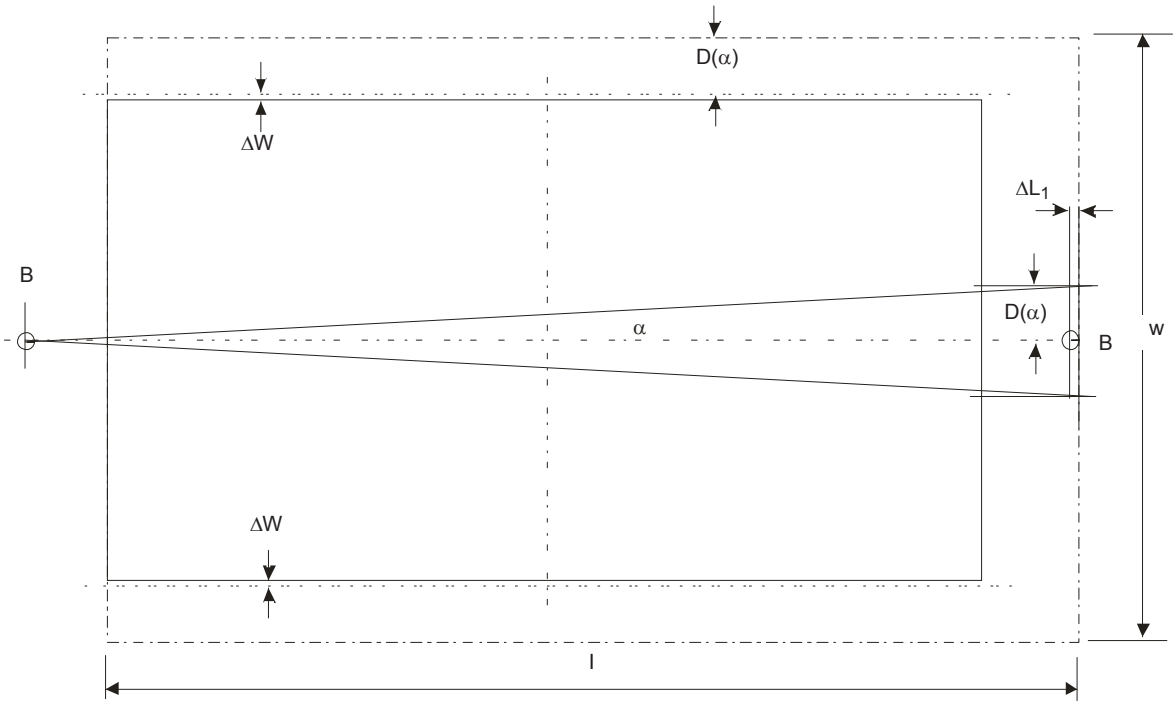
Sheet No. 62639-IEC-	Shape	System power W
A01	Rectangular	70, 75, 80, 100, 120, 150, 200
A02	Circular	80, 100, 120, 150, 200
A03	A110	70, 85
A04	A130	100, 165
A05	A140	150, 200
A06	G95	35
A07	PS110	55
A08	PS180	260
A09	R160	165
A10	T85	40, 55

INDUCTION LAMPS

MAXIMUM LAMP OUTLINE SHEET

70 W, 100 W, 150 W Rectangular shaped

Length dimensions in mm.



Key

B: Fixing point (bracket)
ΔW: Tolerance of W; for W and ΔW see lamp data sheet
ΔL1: Tolerance of L1; for L1 and ΔL1 see lamp data sheet
α: Angle of delineation of the 2 brackets ≤ 1,5 °
D(α): Distance opposite to angle α
Dashed line: maximum outline

	70 W	100 W	150 W
w = W+ΔW+D(α)	146,7	146,7	149,3
l = L1+ΔL1	251,2	251,2	351,2

Texte français au verso
French text overleaf

62639-IEC-A01-1

	INDUCTION LAMPS **MAXIMUM LAMP OUTLINE SHEET** 80 W, 100 W, 120 W, 150 W, 200 W — Circular shaped	

This sheet is void.

Key

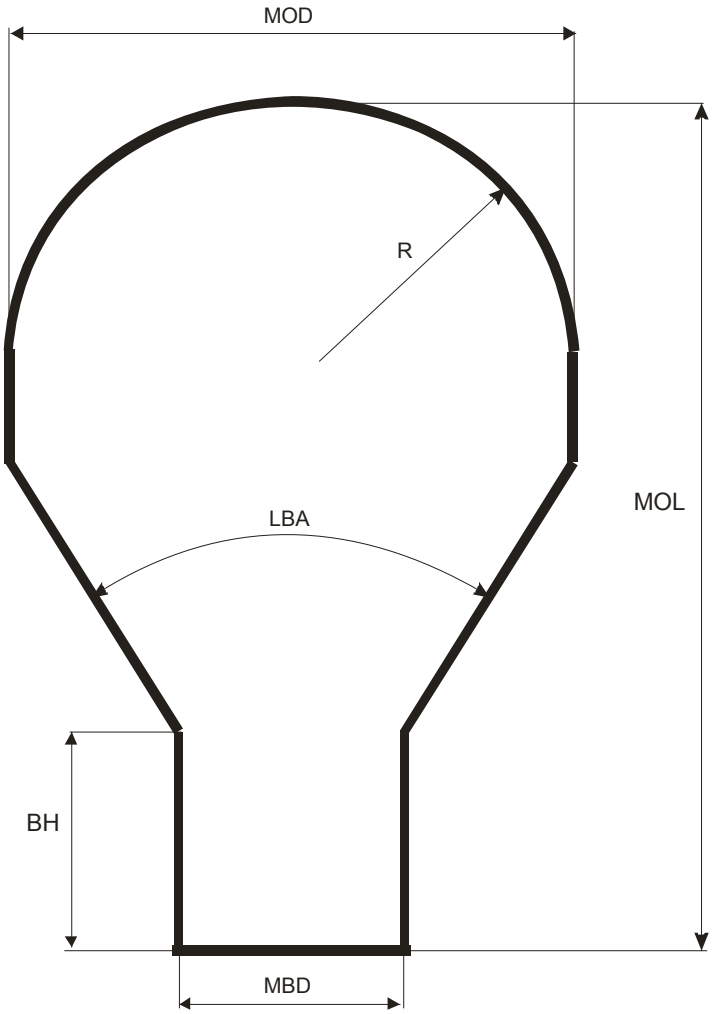
Texte français au verso French text overleaf	**62639-IEC-A02-1**	

INDUCTION LAMPS

MAXIMUM LAMP OUTLINE SHEET

70 W, 85 W A110 shaped

Length dimensions in mm.



Key

MOL: = maximum overall length = 188,5
Minimum OAL: = minimum overall length = 184,5
Minimum BH: = base height = 55,5
MOD: = maximum overall diameter = 122
R: = bowl radius = 54,25
LBA: = lower bowl angle = 64 °
MBD: = maximum base diameter = 57
Angular displacement = 3 °

Texte français au verso
French text overleaf

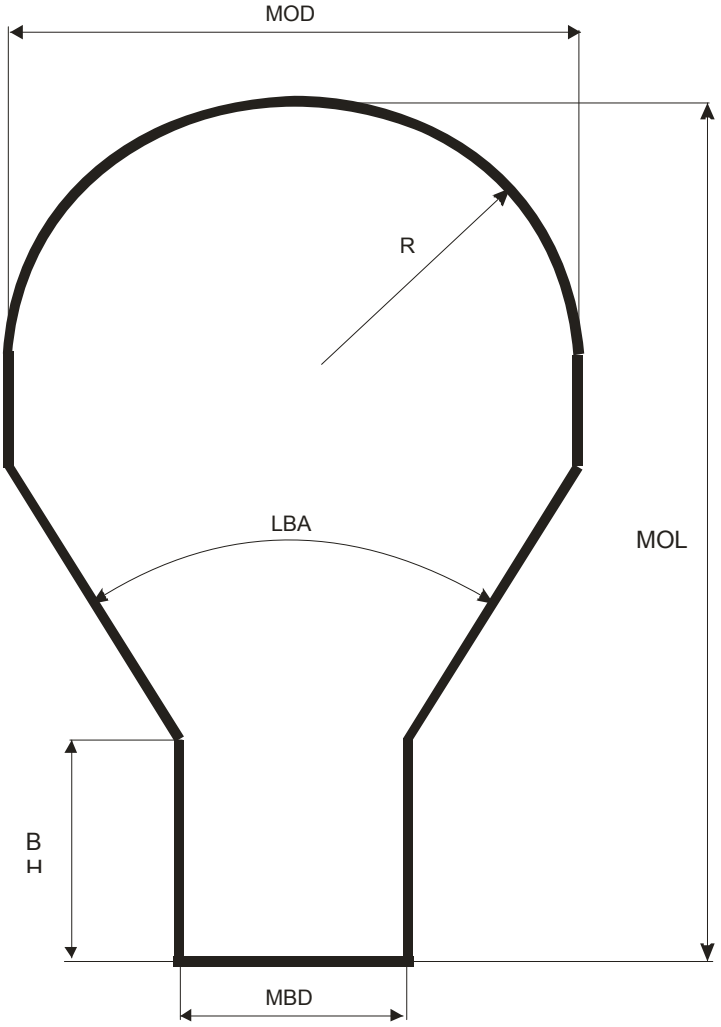
62639-IEC-A03-1

INDUCTION LAMPS

MAXIMUM LAMP OUTLINE SHEET

100 W, 165 W A130 shaped

Length dimensions in mm.



Key

MOL: = maximum overall length = 213,5
Minimum OAL: = minimum overall length = 207,5
Minimum BH: = base height = 55,5
MOD: = maximum overall diameter = 143
R: = bowl radius = 64,5
LBA: = lower bowl angle = 64 °
MBD: = maximum base diameter = 57
Angular displacement = 3 °

Texte français au verso
French text overleaf

62639-IEC-A04-1

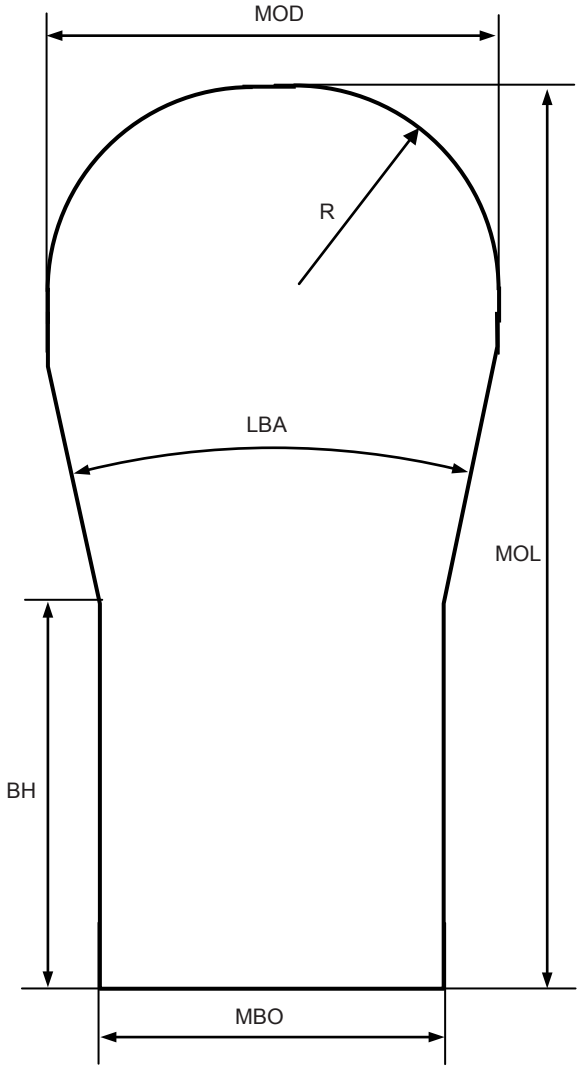
	INDUCTION LAMPS **MAXIMUM LAMP OUTLINE SHEET** 150 W, 200 W A140 shaped	
This sheet is void.		
Texte français au verso French text overleaf	**62639-IEC-A05-1**	

INDUCTION LAMPS

MAXIMUM LAMP OUTLINE SHEET

35 W G95 shaped

Length dimensions in mm.



Key

MOL: = maximum overall length = 211
Minimum OAL: minimum overall length = 203
MBO: = maximum base diameter = 80,4
Minimum BH: = minimum base height = 86,4
MOD: = maximum overall diameter = 105
R = bowl radius = 47,5
LBA = lower bowl angle = 25 °

Texte français au verso
French text overleaf

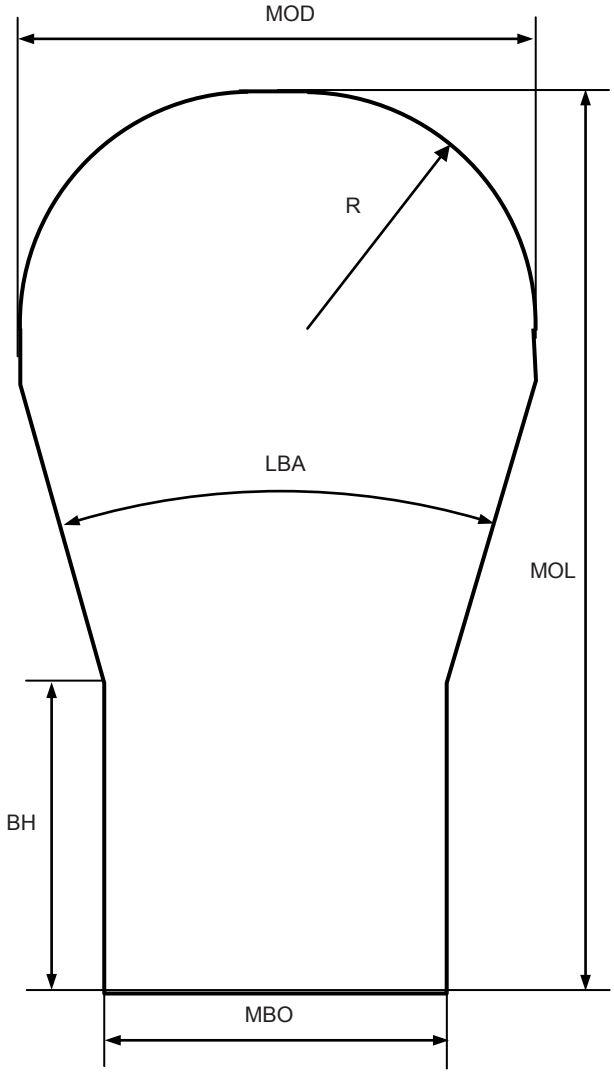
62639-IEC-A06-1

INDUCTION LAMPS

MAXIMUM LAMP OUTLINE SHEET

55 W PS110 shaped

Length dimensions in mm.



Key

MOL: = maximum overall length = 216
Minimum OAL: minimum overall length = 210
MBO: = maximum base diameter = 80,4
Minimum BH: = minimum base height = 73,6
MOD: = maximum overall diameter = 121
R: = bowl radius = 55
LBA: = lower bowl angle = 32 °

Texte français au verso
French text overleaf

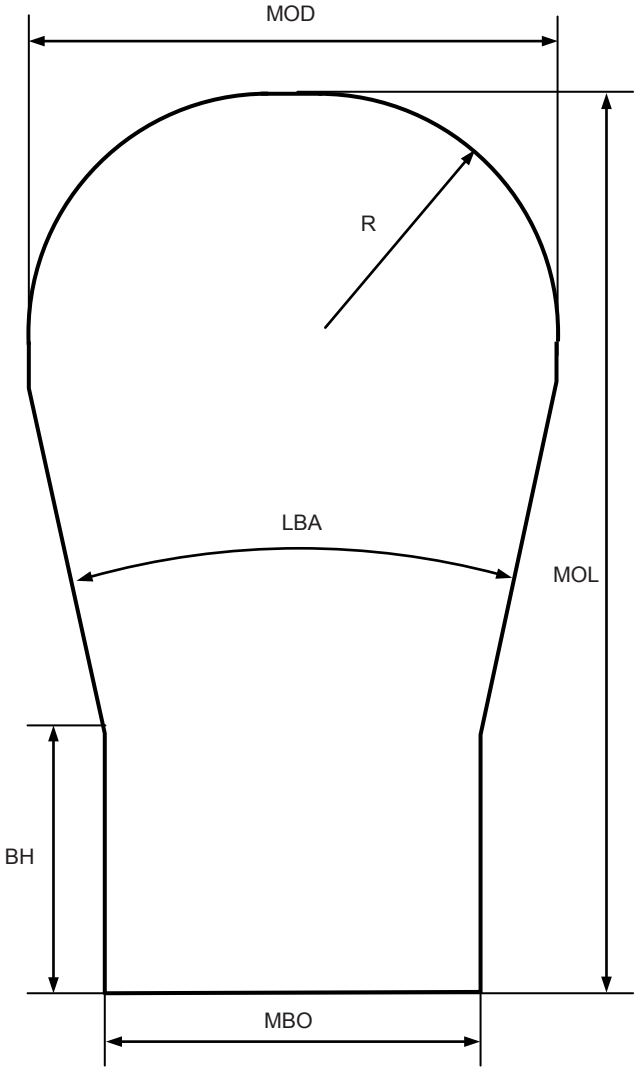
62639-IEC-A07-1

INDUCTION LAMPS

MAXIMUM LAMP OUTLINE SHEET

260 W PS180 shaped

Length dimensions in mm.



Key

MOL: = maximum overall length = 331,5
Minimum OAL: = minimum overall length = 319,5
MBO: = maximum base diameter = 140,4
Minimum BH: = minimum base height = 91,9
MOD: = maximum overall diameter = 198
R: = bowl radius = 90
LBA: = lower bowl angle = 25 °

Texte français au verso
French text overleaf

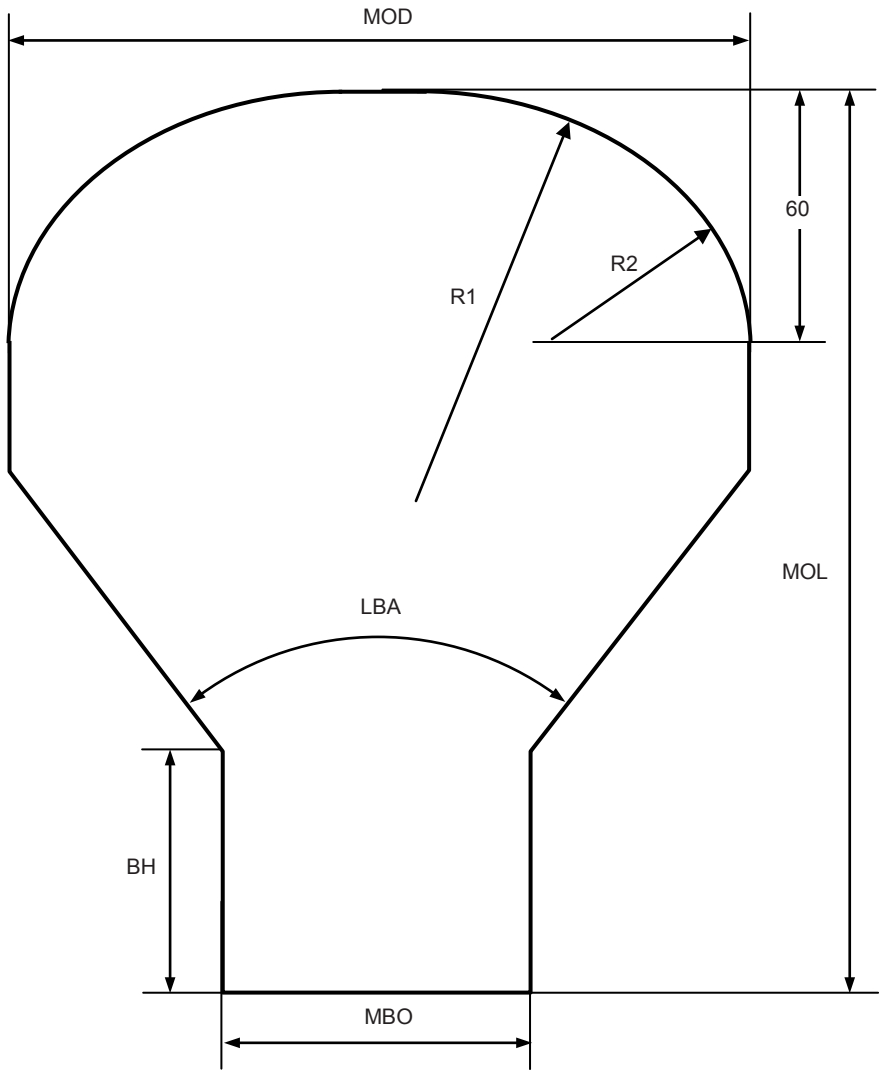
62639-IEC-A08-1

INDUCTION LAMPS

MAXIMUM LAMP OUTLINE SHEET

165 W R160 shaped

Length dimensions in mm.



Key

MOL: = maximum overall length = 216
Minimum OAL: = minimum overall length = 210
MBO: = maximum base diameter = 73,8
Minimum BH = minimum base height = 55,6
MOD: = maximum overall diameter = 170
R1: = bowl radius = 100
R2: = bowl radius = 50
LBA: = lower bowl angle = 75 °

Texte français au verso
French text overleaf

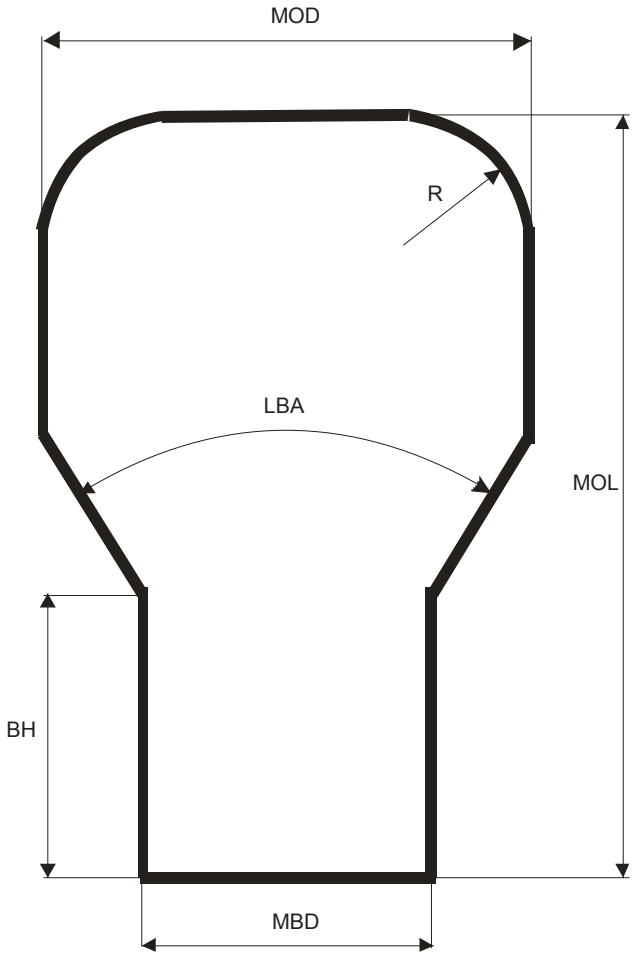
62639-IEC-A09-1

INDUCTION LAMPS

MAXIMUM LAMP OUTLINE SHEET

40 W, 55 W T85 shaped

Length dimensions in mm.



Key

MOL: = maximum overall length = 148,5
Minimum OAL: = minimum overall length = 144,5
Minimum BH: = base height = 55,5
MOD: = maximum overall diameter = 96
R: = bowl radius = 90
LBA: = lower bowl angle = 64 °
MBD: = maximum base diameter = 57
Angular displacement = 3 °

Texte français au verso
French text overleaf

62639-IEC-A10-1

Annex A
(normative)

Method of test for starting characteristics

A.1 General

Tests shall be made in a draught-free and dark atmosphere at an ambient temperature of between 20 °C and 27 °C and a relative humidity of 65 % maximum[1].

Metallic parts and wires in the vicinity of the lamp shall be avoided as far as possible.

Immediately prior to the starting test, the lamps shall be kept inoperative and in an ambient temperature between 20 °C and 27 °C and a relative humidity of 65 % maximum for a period of at least 24 h in dark surroundings.

A.2 Procedure

A.2.1 Choice of the ballast

A specially prepared ballast shall be used with electrical data according to the lamp data sheets and a frequency according to Table A.1.

Table A.1 – Frequencies of specially prepared ballasts

Kind of coupling	Frequency kHz
Internally coupled induction lamp	(1) 2 500 to 3 000 (2) 135 ± 15
Externally coupled induction lamp	250 ± 25

A.2.2 Choice of the load

Complete lamps shall be tested, see definitions 3.1 to 3.4 of IEC 62532.

A.2.3 Breakdown

To be tested at U_{min} of the lamp data sheet.

A.2.4 Takeover, run-up, remaining alight

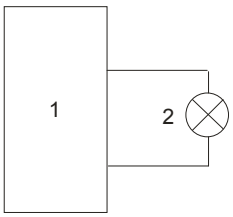
To be conducted with a (tunable) ballast as used in A.2.1 which provides the electrical values according to the lamp data sheet.

---

1 During the measurement of the ambient temperature, the measuring instrument/probe should be shielded from draughts and radiant heating.

A.3 Test circuit

For testing lamps, the circuit in Figure A.1 shall be used.



IEC 139/12

Key

1 Specially prepared ballast, providing the ignition voltage, the lamp voltage, the lamp current and the lamp power according to the lamp data sheet

2 Lamp

Figure A.1 – Test circuit for measurement of starting characteristics

A.4 Normal starting

After Clause A.1, the starting test voltage is applied to the lamp. For the starting test the specially prepared ballast is used. After applying the rated voltage of the ballast to the lamp for 1 h, leaving for at least 24 h without lighting, repeat the test as mentioned above. The lamp shall be tested with the starting test conditions of Clause A.1 and the ballast of Annex D. If the lamp does not start, the starting test is repeated with slowly increasing the voltage to 105 % (under consideration) of its rated value. After starting the lamp, return to rated voltage of the ballast and operate for 1 h, followed by at least 24 h without lighting.

A.5 Starting at low temperature

Instead of Clause A.1 and before the initial readings are taken, the lamp is kept at –5 °C of ambient temperature for at least 24 h. Then the starting test voltage is applied to the lamp. For the starting test the specially prepared ballast is used. After applying the rated voltage of the ballast to the lamp for 1 h, leaving for at least 24 h without lighting, repeat the test as mentioned above. The lamp shall be tested with the starting test conditions of Clause A.1 and the ballast of Annex D. If the lamp does not start, the starting test is repeated with slowly increasing the voltage to 105 % (under consideration) of its rated value. After starting the lamp, return to rated voltage of the ballast and operate for 1 h.

Annex B
(normative)

Method of test for electrical and photometric characteristics

B.1 General

Before the lamps are measured for the first time, they shall be aged for a period of 100 h at their rated values. The supply voltage is held ± 5 % of its rated value during ageing.

Lamps shall be conditioned and tested in a draught-free atmosphere at an ambient temperature of 25 °C ± 1 °C, unless otherwise specified on the relevant lamp data sheet[2].

Lamps shall be tested in the position as specified on the relevant lamp data sheet. In this position the lamp is kept switched off for 16 h to 20 h after at least 24 h of continuous operation, then started again and stabilised for at least 2 h before the measurement starts. The 24 h is part of the 100 h ageing.

NOTE In order to warm up, the lamp may be operated in a location, distant to the test location. When moving to the test location, a further stabilisation period may be necessary in the test location. The interruption of the supply should be as short as possible, and the additional stabilisation period should be at least 15 min.

B.2 Measurement of photometric characteristics

Photometric characteristics shall be measured in accordance with the relevant recommendations of the CIE (Commission Internationale de l'Eclairage).

When measuring in a suitable photometric integrator, the ambient temperature is taken to be the air temperature at the following position:

– at a distance from the bulb wall of not less than 10 % of the nominal diameter of the integrator;
– at a distance from the wall of the integrator of not less than one-sixth of the nominal diameter of the integrator;
– near the lamp axis on a level with the centre of the lamp.

A uniform temperature distribution in the integrator shall be maintained during the test. In the horizontal plane containing the lamp centre, except in the immediate vicinity of the lamp wall, a uniform temperature of ± 1 °C is required. Special care shall be taken if the integrator incorporates a heating system.

Other measurement devices can be used, if the distance and temperature requirements are met. In case of doubt, the integrating sphere shall be used.

The temperature is usually measured by a thermocouple or a thermistor, both protected against radiation by a small shield.

Measurement of light output shall be taken at least once per minute for 15 min. During this time, no reading of light output shall differ by more than 1 % of the minimum reading. If this is not feasible, the real fluctuation shall be stated.

---

2 During the measurement of the ambient temperature, the measuring instrument/probe should be shielded from draughts and radiant heating.

Alternatively to the measurement of light output, the related lamp voltage or lamp current may be taken as indication of light output stability, provided the suitable voltage or current measuring instruments allows a reading of ± 2,5 % of rated lamp voltage or current respectively. Whether voltage or current might be used depends on the type of ballast the lamp is operated with. For a constant current source, the voltage would indicate stability, for a constant voltage source the current needs to be monitored. If the ballast operates the lamp at constant power, one out of both quantities might be chosen.

For measurement of CCT, chromaticity co-ordinates x and y and R_a, refer to IEC 60081, Annex D.

For values and tolerances of the Colour Rendering Index (CRI), refer to the lamp manufacturer's literature.

Lamps might be operated for aging on commercial ballasts which comply with the given electrical characteristics as in lamp data sheets and with heat sinks, if applicable, as given in IEC 62532. For the reading of an aged lamp, the lamp shall be operated with specially prepared ballasts which are capable to operate the lamp with the electrical characteristics as given in the lamp data sheets. The parameter chosen for control of lamp operation (voltage, current or power) shall be kept within ± 1 % of the given value in the relevant lamp data sheet. The circuit is schematically shown in Figure B.1.

Due to the polarity of the lamp, it has to be safeguarded that ballast and lamp terminals are correctly connected together.

NOTE The correct connection can be done for example by marking the terminals, by an unmistakable combination of plugs, or by wire colour coding.

B.3 Electrical instruments

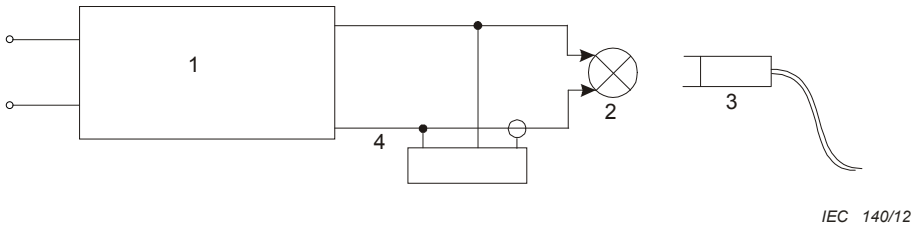
Instruments shall be of the true r.m.s. type, essentially free from waveform errors and suitable for the frequency of operation.

The voltage measuring circuit of the instruments shall have an impedance not less than 1 MΩ, and shall be disconnected when not in use. The current measuring circuit of the instruments shall have the lowest possible resistance and, if necessary, shall be short-circuited when not in use.

When measuring the lamp power, no correction shall be made for the wattmeter consumption (the circuit connection being made on the lamp side of the current measuring circuit).

B.4 Measurement of electrical characteristics

B.4.1 Measurement of electrical characteristics of internally b-type and externally coupled induction lamps and photometrical characteristics



Key

1 Specially prepared control gear, providing the lamp voltage, the lamp current and the lamp power according to the lamp data sheet

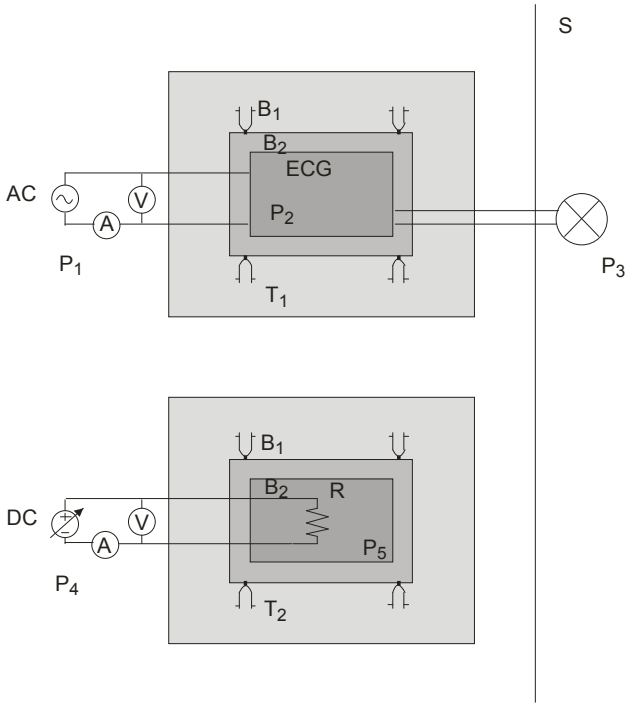
2 Internally b-type and externally coupled induction lamp (for a- and b-types, see lamp data sheets)

3 Measurement device for light output

4 Multimeter

Figure B.1 – Schematic set-up for measurement of electrical characteristics of externally coupled induction lamps and photometrical characteristics

B.4.2 Measurement of electrical characteristics of internally a-type coupled induction lamps



Key

P_1	input power (ECG)	ECG	electronic control gear
P_2	power loss (ECG)	S	shield for radiation from lamp
P_3	lamp power	T_1	ECG temperature
P_4	input power (resistor)	T_2	resistor temperature
P_5	power loss (resistor)	B_1	outer box
R	power resistor	B_2	metal box

Figure B.2 – Example of calorimetric set-up for measurement of power of internally a-type coupled induction lamps

Power of internally coupled a-type lamps is measured indirectly with a set-up as in Figure B.2. The power P_3 consumed by the lamp is calculated as the power consumed by the lamp – controlgear ensemble P_1, diminished by the power loss P_2 of the controlgear. However, the power loss of the controlgear for internally a-type lamps cannot be determined directly, i.e. P_2 is unknown.

$$P_3 = P_1 - P_4$$

In the first step, when operating the lamp, the controlgear is brought to thermal equilibrium, measured with thermocouples. The resulting temperature is T_1. In order not to impact the controlgear temperature, the lamp is thermally separated from the controlgear.

In the second step, the controlgear is not operating the lamp. It is connected to a d.c. heat source, the heating element of which is placed inside the controlgear enclosure. The temperature in the controlgear (T_2) is adjusted via the d.c. supply voltage to the value of T_1. At equilibrium of temperature, the power loss in the controlgear P_5 is the same as the input d.c. power P_4 and the same as the power P_2 in the controlgear in step 1.

$$P_2 = P_5 = P_4$$

Annex C
(normative)

Method of test for lumen maintenance and life

C.1 General

The luminous flux at a given time in the life of a lamp shall be measured as specified in Annex B.

During the life testing, lamps shall be operated as follows.

Lamps shall be operated at an ambient temperature of between 15 °C and 50 °C. Excessive draughts shall be avoided and the lamps shall not be subject to extreme vibration and shock.

Lamps shall be operated in the test position as specified on the relevant lamp data sheet.

The lamps shall be operated over life time with the heat sink as specified by the lamp manufacturer.

Lamps shall be switched off for 1 h after each 11 h of operation.

NOTE In some countries, cycles deviating from 11 h ON / 1 h OFF are used.

C.2 Ballasts to be used in life time tests

The ballast used shall comply with information for ballast design on the lamp data sheets (see 7.2), Annex D and the relevant clauses of IEC 60929.

Annex D
(informative)

Information for ballast design

D.1 General

Due to the polarity of the lamp, it has to be safeguarded that ballast and lamp terminals are correctly connected together.

NOTE The correct connection can be done for example by marking the terminals, by an unmistakable combination of plugs, or by wire colour coding.

D.2 Combined starting and operating test for ballasts

The circuit in Figure D.1 should be used when testing both starting and operation of ballasts. When testing the open circuit voltage, the resistor (key 4 in the figure) has to be removed.

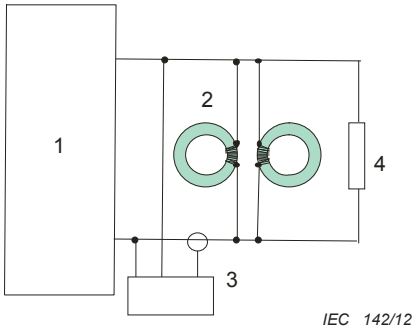


Figure D.1a – Externally coupled plasma

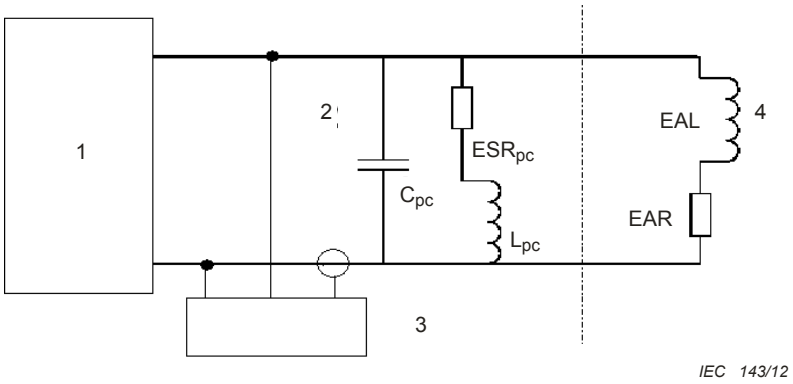


Figure D.1b – Internally a-type coupled plasma

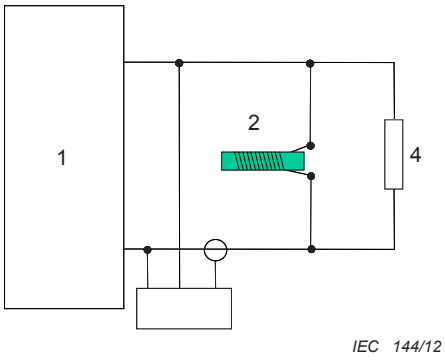


Figure D.1c – Internally b-type coupled plasma

Key

1 Ballast under test

2 Externally coupled lamp: Cores plus windings as provided by the lamp manufacturer. The magnetising inductance of the 2 cores is given on the lamp data sheet.

Internally a-type coupled lamp: Capacity C_{PC}, self-inductance L_{PC} and equivalent serial resistance ESR_{PC} of the power coupler are given on the lamp data sheet.

Internally b-type coupled lamp: Core plus winding as provided by the lamp manufacturer. The magnetising inductance L_{em} of the core is given on the lamp data sheet.

3 Instrument for measuring voltage, current, phase shift and frequency

4 Externally coupled lamp: Substitution resistor $R_{d\ op}$ is given on the lamp data sheet.

Internally a-type coupled lamp: Equivalent arc inductance EAL and equivalent arc resistance EAR are given on the lamp data sheet.

Internally b-type coupled lamp: Substitution resistor $R_{d\ op}$ is given on the lamp data sheet.

Figure D.1 – Circuit for testing ballasts – Lamp voltage, lamp current, phase shift and frequency measured at starting and during operation

D.3 Ballast starting test

The circuit in Figure D.2 should be used when testing open circuit voltage and starting of ballasts.

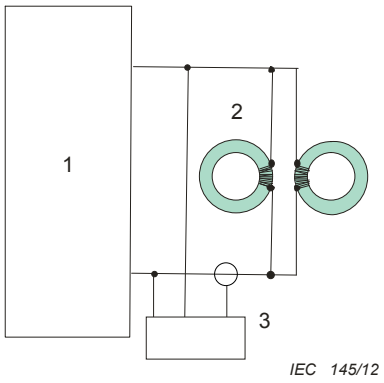


Figure D.2a – Externally coupled plasma

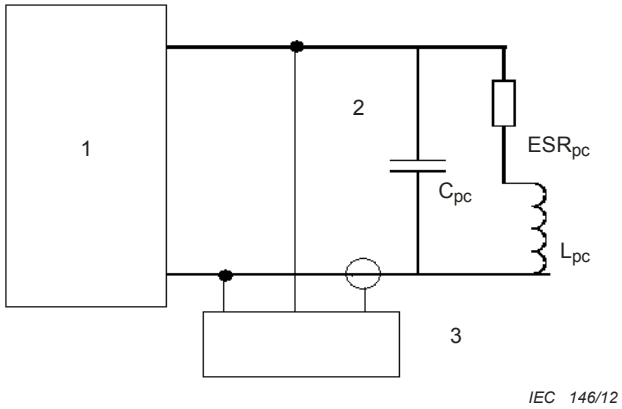


Figure D.2b – Internally a-type coupled plasma

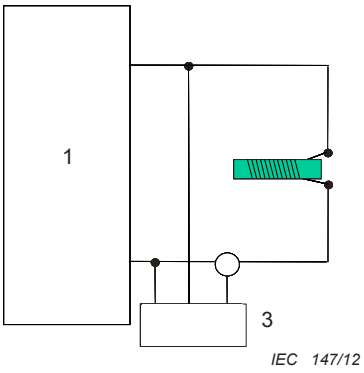


Figure D.2c – Internally b-type coupled plasma

Key

1 Ballast under test

2 Externally coupled lamp: Cores plus windings as provided by the lamp manufacturer. The magnetising inductance of the 2 cores is given on the lamp data sheet.

Internally a-type coupled lamp: Capacity C_{PC}, self-inductance L_{PC} and equivalent serial resistance ESR_{PC} of the power coupler are given on the lamp data sheet.

Internally b-type coupled lamp: Core plus winding as provided by the lamp manufacturer. The magnetising inductance L_{em} of the 1 core is given on the lamp data sheet.

3 Instrument for measuring voltage, current, phase shift and frequency

Figure D.2 – Circuit for testing ballasts – Lamp voltage, current and frequency measured at starting

D.4 Ballast operating test

The circuit in Figure D.3 should be used when testing the operation of ballasts (steady state).

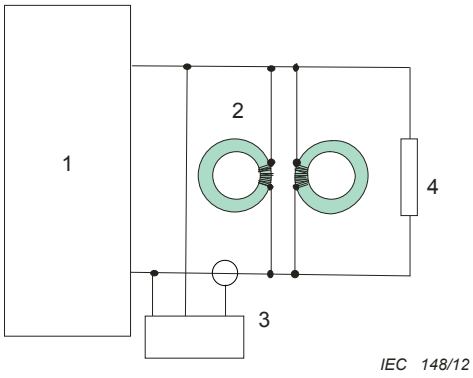


Figure D.3a – Externally coupled plasma

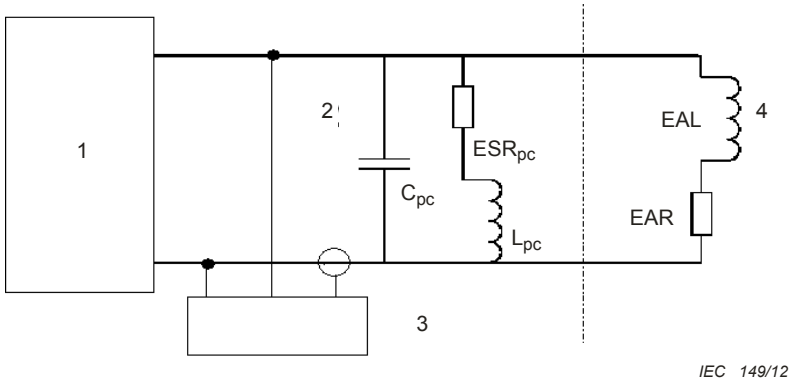


Figure D.3b – Internally a-type coupled plasma

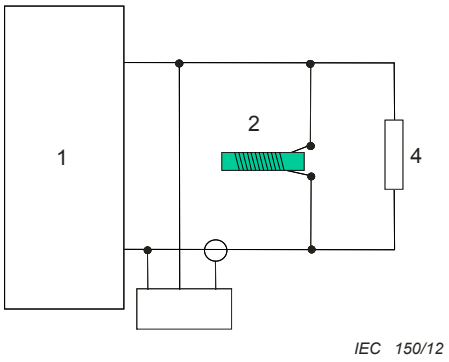


Figure D.3c – Internally b-type coupled plasma

Key

1 Ballast under test

2 Externally coupled lamp: Cores plus windings as provided by the lamp manufacturer. The magnetising inductance of the 2 cores is given on the lamp data sheet.

Internally a-type coupled lamp: Capacity C_{PC}, self-inductance L_{PC} and equivalent serial resistance ESR_{PC} of the power coupler are given on the lamp data sheet.

Internally b-type coupled lamp: Core plus winding as provided by the lamp manufacturer. The magnetising inductance L_{em} of the 1 core is given on the lamp data sheet.

3 Instrument for measuring voltage, current, phase shift and frequency

4 Externally coupled lamp: Substitution resistor $R_{d\ op}$ is given on the lamp data sheet.

Internally a-type coupled lamp: Equivalent arc inductance EAL and equivalent arc resistance EAR are given on the lamp data sheet.

Internally b-type coupled lamp: Substitution resistor $R_{d\ op}$ is given on the lamp data sheet.

Figure D.3 – Circuit for testing ballasts – Lamp voltage, current, phase shift and frequency measured during operation

Annex E
(informative)

Information for luminaire design

E.1 General

In order to safeguard proper functioning of the lamp, the relevant information, given on the lamp data sheet and in this annex, should be taken into account when designing luminaires.

E.2 Electrical connections

Due to the polarity of the lamp, it has to be safeguarded that ballast and lamp terminals are correctly connected together.

NOTE The correct connection can be done for example by marking the terminals, by an unmistakable combination of plugs, or by wire colour coding.

E.3 Maximum lamp outlines

For mechanical acceptance of lamps complying with this standard, a free space should be provided in the luminaire, based on the maximum lamp outlines.

Maximum lamp outline drawings are given in 7.3.

The gap between maximum lamp outlines and luminaire should be as big as to prevent thermal contact of the discharge vessel with the metal parts of the luminaire.

E.4 Electromagnetic compatibility

Lamps of different manufacturers may contribute differently to electromagnetic interference.

E.5 Thermal conditions

The thermal limits of ballast and lamp should not be exceeded. For details, the ballast and lamp manufacturer should be contacted.

Bibliography

IEC 60050-845:1987, *International Electrotechnical Vocabulary – Chapter 845: Lighting* Available from: http://www.electropedia.org

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