



BSI Standards Publication

Energy performance of buildings — Energy requirements for lighting

Part 1: Specifications, Module M9

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National foreword

This British Standard is the UK implementation of EN 15193-1:2017+A1:2021. It supersedes BS EN 15193-1:2017, which is withdrawn.

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The UK participation in its preparation was entrusted to Technical Committee EL/1, Light and lighting applications.

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

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module M9

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Anforderungen an die Beleuchtung - Teil 1:
Spezifikationen, Modul M9

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Contents	Page
European foreword	5
Introduction	6
1 Scope	9
2 Normative references	11
3 Terms and definitions	11
4 Symbols and abbreviations	12
4.1 Symbols and units.....	12
4.2 Subscripts	18
4.3 Abbreviations.....	18
5 Brief description of the method(s) and routing	18
5.1 Output of the method 1 – Comprehensive method.....	18
5.2 Optional methods	19
5.2.1 Method 2 – Quick calculation method	19
5.2.2 Method 3 – Direct metering method	19
5.3 Selection criteria between the methods.....	19
6 Method 1 - Calculation of the energy required for lighting	20
6.1 Output data	20
6.2 Calculation time interval and calculation period.....	20
6.3 Input data.....	21
6.3.1 Lighting system data.....	21
6.3.2 Product data	21
6.3.3 System design data.....	22
6.3.4 Operating conditions.....	23
6.3.5 Constants and physical data.....	23
6.4 Calculation procedure.....	23
6.4.1 Applicable time step	23
6.4.2 Operating conditions calculation.....	23
6.4.3 Energy for lighting calculation.....	23
6.5 Expenditure factors for lighting systems	27
7 Method 2 - Quick calculation of the energy required for lighting	30
7.1 Output data	30
7.2 Calculation time steps	30
7.3 Input data.....	30
7.3.1 Lighting system data.....	30
7.3.2 Luminaire data.....	31
7.3.3 System design data.....	31
7.3.4 Operating conditions.....	31
7.3.5 Constants and physical data.....	31
7.4 Calculation procedure.....	31
7.4.1 Applicable time step	31
7.4.2 Operating conditions calculation.....	31
7.4.3 Energy calculation	31
7.5 Expenditure factors for lighting systems	34
8 Method 3 - Metered energy used for lighting	34
8.1 Output data	34
8.2 Calculation time steps	35
8.3 Input data.....	35

This is a preview of "BS EN 15193-1:2017+A...". [Click here to purchase the full version from the ANSI store.](#)

8.4	Calculation procedure of annual energy	35
9	Quality control	36
9.1	Method 1	36
9.2	Method 2	36
9.3	Method 3	36
10	Compliance check	36
10.1	General	36
10.2	Method 1	36
10.3	Method 2	37
10.4	Method 3	37
	Annex A (normative) Input and method selection data sheet — Template	38
A.1	General	38
A.2	System design data	38
A.2.1	General	38
A.2.2	Standby energy density	39
A.2.3	Annual operating hours	39
A.2.4	Daylight supply factor for vertical façades	39
A.2.5	Daylight supply factor for roof lights	39
A.2.6	Absence factor (F_A) for rooms in building types	39
A.2.7	Example constant illuminance dependency factors (F_c)	40
A.2.8	Installed power for residential buildings	40
A.2.9	Useful areas in residential buildings	41
	Annex B (informative) Input and method selection data sheet — Default choices	42
B.1	General	42
B.2	Method 1	42
B.2.1	Luminaire description data	42
B.2.2	Luminaire technical data tables	42
B.2.3	System design data	43
B.3	Method 2	43
B.3.1	Luminaire description data	43
B.3.2	Luminaire technical data tables	43
B.3.3	System design data	43
B.4	Method 3	49
	Annex C (normative) Simplified Method for Installed Power Estimation	50
C.1	General	50
C.2	Installed power assessment for non-residential buildings	50
C.3	Installed power assessment for residential buildings	52
	Annex D (normative) Assessment of the installed power for lighting systems in existing buildings	53
	Annex E (normative) Occupancy estimation	54

This is a preview of "BS EN 15193-1:2017+A...". [Click here to purchase the full version from the ANSI store.](#)

Annex F (normative) Daylight availability	59
F.1 General	59
F.2 Building segmentation: Spaces benefiting from daylight	61
F.3 Daylight supply factor for vertical façades	63
F.3.1 Daylight factor classification	63
F.3.2 Daylight supply factor	69
F.4 Daylight supply factor for roof lights	81
F.4.1 General	81
F.4.2 Daylight availability factor	81
F.4.3 Daylight supply factor	86
F.4.4 Relative times, shading activated/ not activated for roof lights	87
F.4.5 Daylight supply factors as function of the daylight availability classification	89
F.5 \square_{A1} Daylight supply factor for windows in sloped roofs \square_{A1}	93
F.6 Daylight Responsive Control Systems	95
F.7 Monthly evaluation method	97
F.8 Determination of daytime and night time hours	98
F.9 Comprehensive calculation	101
F.10 Collection of input data required for daylight calculations	102
Annex G (normative) Constant illuminance	103
G.1 General	103
G.2 Constant illuminance factor (F_c)	103
G.3 Constant lumen output system (CLO)	104
Annex H (normative) Standby system energy requirements	105
H.1 Emergency lighting luminaire standby charging power (P_{em})	105
H.2 Lighting controls standby power (P_{pc})	105
Bibliography	106

This is a preview of "BS EN 15193-1:2017+A...". [Click here to purchase the full version from the ANSI store.](#)

European foreword

This document (EN 15193-1:2017+A1:2021) has been prepared by Technical Committee CEN/TC 169 "Light and lighting", the secretariat of which is held by DIN.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by December 2021, and conflicting national standards shall be withdrawn at the latest by December 2021.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN shall not be held responsible for identifying any or all such patent rights.

This document includes Amendment 1 approved by CEN on 4 May 2021.

This document supersedes A1 EN 15193:2017 A1.

The start and finish of text introduced or altered by amendment is indicated in the text by tags A1 A1.

This document has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association.

EN 15193 consists of the following parts, under the general title "Energy performance of buildings — Energy requirements for lighting".

Part 1: Specifications, Module M9

Part 2: (Technical Report) Explanation and justification of EN 15193-1, Module M9

According to the CEN-CENELEC Internal Regulations, the national standards organisations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

Introduction

This Standard is part of a series of standards aiming at international harmonization of the methodology for the assessment of the energy performance of buildings, called "set of EPB standards".

All EPB standards follow specific rules to ensure overall consistency, unambiguity and transparency.

All EPB standards provide a certain flexibility with regard to the methods, the required input data and references to other EPB standards, by the introduction of a normative template in Annex A and Annex B with informative default choices.

For the correct use of this standard a normative template is given in Annex A to specify these choices. Informative default choices are provided in Annex B.

The main target groups of this standard are all the users of the set of EPB standards (e.g. architects, engineers, regulators).

Use by or for regulators: In case the standard is used in the context of national or regional legal requirements, mandatory choices may be given at national or regional level for such specific applications. These choices (either the informative default choices from Annex B or choices adapted to national / regional needs, but in any case following the template of this Annex A) can be made available as national annex or as separate (e.g. legal) document (national data sheet).

NOTE So in this case:

- the regulators will specify the choices;
- the individual user will apply the standard to assess the energy performance of a building, and thereby use the choices made by the regulators.

Topics addressed in this standard can be subject to public regulation. Public regulation on the same topics can override the default values in Annex B. Public regulation on the same topics can even, for certain applications, override the use of this standard. Legal requirements and choices are in general not published in standards but in legal documents. In order to avoid double publications and difficult updating of double documents, a national annex may refer to the legal texts where national choices have been made by public authorities. Different national annexes or national data sheets are possible, for different applications.

It is expected, if the default values, choices and references to other EPB standards in Annex B are not followed due to national regulations, policy or traditions, that:

- national or regional authorities prepare data sheets containing the choices and national or regional values, according to the model in Annex A. In this case the national annex (e.g. NA) refers to this text;
- or, by default, the national standards body will consider the possibility to add or include a national annex in agreement with the template of Annex A, in accordance to the legal documents that give national or regional values and choices.

Further target groups are parties wanting to motivate their assumptions by classifying the building energy performance for a dedicated building stock.

More information is provided in the Technical Report accompanying this standard (CEN/TR 15193-2 [5]).

CEN/TC 169 deals with light and lighting and the subjects covered by committee are:

- Lighting criteria for indoor and outdoor activities;
- Photometry of lighting systems;

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- Lighting terminology;
- Energy efficiency of lighting systems.

This standard specifies three methods for evaluating the energy performance of lighting systems.

It is of paramount importance that correct lighting is provided in buildings. The convention and procedures in this standard assumes that the designed and installed lighting scheme conforms to good lighting practices. For new and refurbished installations in the non-residential building sector the design of the lighting system should conform to the requirements in the lighting applications standards EN 12464-1 for indoor workplaces, EN 12193 for sports buildings and EN 1838 for emergency escape lighting. For residential buildings the lighting system should be designed to fulfil the needs of the rooms in the buildings. Guidance on the requirements is provided in the supporting Technical Report CEN/TR 15193-2 [5]).

This standard also assumes that the buildings can have access to daylight to provide all or some of the illumination required in the rooms and that in addition there will be an adequate amount of electric lighting installed to provide the required illumination in the absence of daylight or with a reduced daylight contribution.

This standard defines the methods for estimating or measuring the amount of energy required or used for lighting in buildings. The method of separate metering of the energy used for lighting will also give regular feedback on the effectiveness of the lighting control.

The methodology of energy estimation not only provides values for the Lighting Energy Numeric Indicator (*LENI*) but it will also provide input for the heating and cooling load estimations for the combined total energy performance of building indicator.

Figure 1 gives an overview of the methodology and the flow of the processes involved.

NOTE The dotted line in Figure 1 linking preliminary annual *LENI* to the comprehensive lighting design indicates the requirement to follow-up the budget calculation with a comprehensive calculation during the detailed lighting design process.

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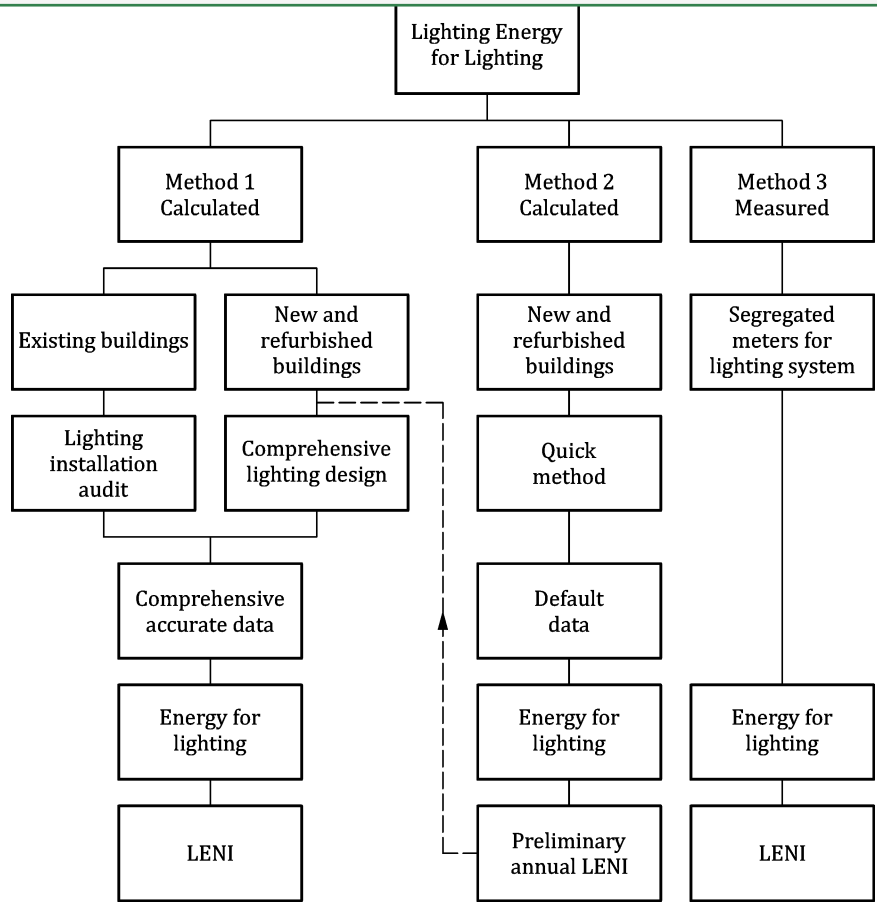


Figure 1 — Flow chart illustrating methods to determine energy for lighting

This standard was developed during the first EPBD mandate and the first edition was published in 2007.

The revision for inclusion in the second mandate package was performed during 2013-2016.

The most important changes are:

- extension of calculation methods,
- inclusion of lighting for residential buildings,
- substantial editorial changes.

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1 Scope

This standard specifies the methodology for evaluating the energy performance of lighting systems for providing general illumination in residential and non-residential buildings and for calculating or measuring the amount of energy required or used for lighting in buildings. The method may be applied to new, existing or refurbished buildings. It also provides a methodology (*LENI*) as the measure of the energy efficiency of the lighting installations in buildings.

This standard does not cover lighting requirements, the design of lighting systems, the planning of lighting installations, the characteristics of lighting equipment (lamps, control gear and luminaires) and systems used for display lighting, desk lighting or luminaires built into furniture. This standard does not provide any procedure for the dynamic simulation of lighting scene setting.

Table 1 shows the relative position of this standard within the set of EPB standards in the context of the modular structure as set out in EN ISO 52000-1.

NOTE In CEN ISO/TR 52000-2 the same table can be found, with, for each module, the numbers of the relevant EPB standards and accompanying technical reports that are published or in preparation.

The modules represent EPB standards, although one EPB standard may cover more than one module and one module may be covered by more than one EPB standard, for instance a simplified and a detailed method respectively. See also Clause 2.

Table 1 — Position of this standard within the modular structure of the set of EPB standards

Submodule	Overarching		Building (as such)		Technical Building Systems										
	Descriptions		Descriptions		Descriptions	Heating	Cooling	Ventilation	Humidification	Dehumidification	Domestic hot water	Lighting	Building automation and control	PV, wind, ..	
sub1		M1		M2		M3	M4	M5	M6	M7	M8	M9	M10	M11	
1	General		General		General										
2	Common terms and definitions; symbols, units and subscripts		Building Energy Needs		Needs							EN 15193 -1	a		
3	Applications		(Free) Indoor Conditions without Systems		Maximum Load and Power							EN 15193 -1			
4	Ways to Express Energy Performance		Ways to Express Energy Performance		Ways to Express Energy Performance							EN 15193 -1			
5	Building categories and Building Boundaries		Heat Transfer by Transmission		Emission and control							EN 15193 -1			