



BSI Standards Publication

## **Energy performance of buildings - Method for calculation of system energy requirements and system efficiencies**

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Part 2: Space emission systems (heating and cooling), Module M3-5, M4-5

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## National foreword

This British Standard is the UK implementation of EN 15316-2:2017. It supersedes BS EN 15316-2-1:2007, which is withdrawn.

The UK participation in its preparation was entrusted to Technical Committee RHE/24, Heating systems and water based cooling systems in buildings.

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.

© The British Standards Institution 2017  
Published by BSI Standards Limited 2017

ISBN 978 0 580 87453 6

ICS 91.140.10

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

This British Standard was published under the authority of the Standards Policy and Strategy Committee on 30 June 2017.

### Amendments/corrigenda issued since publication

Date	Text affected
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## EUROPÄISCHE NORM

May 2017

ICS 91.140.10

Supersedes EN 15316-2-1:2007

English Version

**Energy performance of buildings - Method for calculation  
of system energy requirements and system efficiencies -  
Part 2: Space emission systems (heating and cooling),  
Module M3-5, M4-5**

Performance énergétique des bâtiments - Méthode de calcul des besoins énergétiques et des rendements des systèmes - Partie 2 : Systèmes d'émission des locaux (chauffage et refroidissement), Module M3-5, M4-5

Energetische Bewertung von Gebäuden - Verfahren zur Berechnung der Energieanforderungen und Nutzungsgrade der Anlagen - Teil 2: Wärmeübergabesysteme (Raumheizung und -kühlung), Modul M3-5, M4-5

This European Standard was approved by CEN on 27 February 2017.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the CEN-CENELEC Management Centre or to any CEN member.

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

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EUROPEAN COMMITTEE FOR STANDARDIZATION  
COMITÉ EUROPÉEN DE NORMALISATION  
EUROPÄISCHES KOMITEE FÜR NORMUNG

**CEN-CENELEC Management Centre: Avenue Marnix 17, B-1000 Brussels**

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## European foreword

This document (EN 15316-2:2017) has been prepared by Technical Committee CEN/TC 228 "Energy performance of buildings", the secretariat of which is held by DIN.

This document supersedes EN 15316-2-1:2007.

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 October 2017, and conflicting national standards shall be withdrawn at the latest by October 2017.

The main changes compared to the previous version are:

- a) only one calculation method for heating and cooling emission systems;
- b) the calculation method is only based on temperature differences (the calculation method based on efficiency values are no longer exist in the new standard);
- c) the new calculation method define input parameter from product standards;
- d) the new standard includes consistent default values for the control devices.

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

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.

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, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

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## Introduction

This European 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.

CEN/TC 228 deals with heating systems in buildings. Subjects covered by CEN/TC 228 are:

- a) energy performance calculation for heating systems;
- b) inspection of heating systems;
- c) design of heating systems;
- d) installation and commissioning of heating systems.

This standard constitutes the specific part related to space heating and cooling emission, of a set of standards determining methods for calculation of energy losses/requirements of space heating and cooling systems, space cooling systems and domestic hot water systems in buildings.

This standard specifies the structure for calculation of the additional heat and cooling losses and energy requirements of a heat and cooling emission systems for meeting the building net energy demand.

The calculation method is used for the following applications:

- calculation of the additional energy losses in the heat emission system or cooling system;
- optimization of the energy performance of a planned heat emission system or cooling system, by applying the method to several possible options;

The user should refer to other European Standards or to national documents for input data and detailed calculation procedures not provided by this standard. This standard was developed during the first EPBD mandate and the first version was published in 2008. The revision for inclusion in the second mandate package was performed in 2014. The two calculation methods have been removed from the standard and a new one was added. The standard was updated to cover hourly and monthly time-step.

The main target group of this standard are all the users of the set of EPB standards. 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, in particular for the application within the context of EU Directives transposed into national legal requirements. 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.

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).

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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, for certain applications, override the default values in Annex B of this standard. 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, the National Annex may refer to the legal texts where national choices have been made by public authorities.

It is expected, if the default values and choices 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 users of the voluntary common European Union certification scheme for the energy performance of non-residential buildings (EPBD art.11.9) and any other Pan EU 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 15316-6-2,).

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## 1 Scope

This European Standard's scope is to standardize the required inputs, the outputs and the links (structure) of the calculation method in order to achieve a common European calculation method.

This standard covers energy performance calculation of heating systems and water based cooling space emission sub-systems.

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 1 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.

NOTE 2 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 and Tables A.1 and B.1.