



BSI Standards Publication

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

Part 3: Space distribution systems (DHW, heating
and cooling), Module M3-6, M4-6, M8-6

This is a preview of "BS EN 15316-3:2017". [Click here to purchase the full version from the ANSI store.](#)

National foreword

This British Standard is the UK implementation of EN 15316-3:2017. It supersedes BS EN 15316-2-3:2007 and BS EN 15316-3-2:2007, which are withdrawn.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 87455 0

ICS 91.140.30; 91.140.65; 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
------	---------------

This is a preview of "BS EN 15316-3:2017". [Click here to purchase the full version from the ANSI store.](#)

EUROPÄISCHE NORM

April 2017

ICS 91.140.10; 91.140.30; 91.140.65

Supersedes EN 15316-2-3:2007, EN 15316-3-2:2007

English Version

Energy performance of buildings - Method for calculation of system energy requirements and system efficiencies - Part 3: Space distribution systems (DHW, heating and cooling), Module M3-6, M4-6, M8-6

Performance énergétique des bâtiments - Méthode de calcul des besoins énergétiques et des rendements des systèmes - Partie 3 : Systèmes de distribution des locaux (eau chaude sanitaire, chauffage et refroidissement), Module M3-6, M4-6, M8-6

Energetische Bewertung von Gebäuden - Verfahren zur Berechnung der Energieanforderungen und Nutzungsgrade der Anlagen - Teil 3: Wärmeverteilungssysteme (Trinkwassererwärmung, Heizung und Kühlung), Module M3-6, M4-6, M8-6

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.

CEN members are the national standards bodies of 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 United Kingdom.



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

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

This is a preview of "BS EN 15316-3:2017". [Click here to purchase the full version from the ANSI store.](#)

Contents

European foreword.....	3
Introduction	4
1 Scope	6
2 Normative references	8
3 Terms and definitions	8
4 Symbols and abbreviations	8
4.1 Symbols.....	8
4.2 Subscripts.....	8
5 General description of the method - Output of the method.....	9
6 Calculation of heat losses and auxiliary energy of distribution systems.....	9
6.1 Output data.....	9
6.2 Calculation time steps	10
6.3 Input data.....	10
6.4 Calculation procedure	14
7 Quality control	21
8 Compliance check.....	21
Annex A (informative) Simplified input data correlations	22
A.1 General.....	22
A.2 Input correlations to the length of pipes in zones (buildings)	22
Annex B (informative) Simplified input data correlations	26
B.1 General.....	26
B.2 Input correlations to the length of pipes in zones (buildings)	26
B.3 Input correlations to linear thermal transmittance of pipes in zones (buildings)	31
B.4 Input correlations to constants for distribution pumps.....	33
B.5 Input correlations to additional resistances and resistance ratio.....	33
B.6 Input correlations factor for recoverable auxiliary energy	35
Annex C (informative) Input data - Energy efficiency index of real water-pumps.....	36
C.1 Product description data.....	36
C.2 Product technical data	36
Bibliography.....	37

This is a preview of "BS EN 15316-3:2017". [Click here to purchase the full version from the ANSI store.](#)

European foreword

This document (EN 15316-3:2017) has been prepared by Technical Committee CEN/TC 228 "Heating systems and water based cooling systems in buildings", the secretariat of which is held by DIN.

This document supersedes EN 15316-2-3:2007 and EN 15316-3-2:2007.

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.

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.

This is a preview of "BS EN 15316-3:2017". [Click here to purchase the full version from the ANSI store.](#)

Introduction

This standard is part of a package developed to support EPBD directive implementation, hereafter called "EPB set of 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 TC 228 are:

- energy performance calculation for heating systems;
- inspection of heating systems;
- design of heating systems;
- installation and commissioning of heating systems

This standard specifies the heat flux from distribution systems in space heating systems, space cooling systems and domestic hot water systems. This standard also specifies the auxiliary energy for pumps in space heating systems, space cooling systems and domestic hot water systems.

This standard was developed during the first EPBD mandate and the first version was published in 2008 in two different parts – space heating systems and domestic hot water systems.

This standard is dealing with both earlier standards (EN 15316-2-3 and EN 15316-3-2) and added space cooling systems.

The revision concerned mainly unique calculation methods for the water-based distribution systems for the heat flux as well as for the auxiliary energy of pumps.

The standard was updated to cover hourly/monthly/yearly time-step.

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 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, 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.

This is a preview of "BS EN 15316-3:2017". [Click here to purchase the full version from the ANSI store.](#)

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.

This is a preview of "BS EN 15316-3:2017". [Click here to purchase the full version from the ANSI store.](#)

1 Scope

This European Standard covers energy performance calculation of water based distribution systems for space heating, space cooling and domestic hot water.

This European Standard deals with the heat flux from the distributed water to the space and the auxiliary energy of the related pumps.

The heat flux and the auxiliary energy for pumps can be calculated at any time-step (hour, month and year). The input and output data are mean values of the time step.

Instead of calculating the energy performance of water based distribution systems it is also possible to use measurements as long as they are following the timesteps of the whole performance calculation or can be divided in those timesteps.

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 52000-1:2017.

NOTE 1 In CEN ISO/TR 52000-2:2017 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.