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NSAI Standards

Irish Standard
I.S. EN 12831-3:2017

Energy performance of buildings - Method for calculation of the design heat load - Part 3: Domestic hot water systems heat load and characterisation of needs, Module M8-2, M8-3

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I.S. EN 12831-3:2017

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This document replaces/revises/consolidates the NSAI adoption of the document(s) indicated on the CEN/CENELEC cover/Foreword and the following National document(s):

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National Foreword

I.S. EN 12831-3:2017 is the adopted Irish version of the European Document EN 12831-3:2017, Energy performance of buildings - Method for calculation of the design heat load - Part 3: Domestic hot water systems heat load and characterisation of needs, Module M8-2, M8-3

This standard has been drafted so that it can be used in the context of national legal requirements and as such mandatory choices may be given at national level for specific applications. Default values for those parameters subject to national choice are listed in Annex B.

Currently this standard is being reviewed by the relevant national authorities after which a decision will be made on the use of the default values (Annex B) or otherwise.

Users of this Irish standard are advised to check for updates as to the status of the national decision in relation to the use of those values listed in Annex B.

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

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EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 12831-3

July 2017

ICS 91.140.10; 91.140.65

Supersedes EN 15316-3-1:2007

English Version

Energy performance of buildings - Method for calculation of the design heat load - Part 3: Domestic hot water systems heat load and characterisation of needs, Module M8-2, M8-3

Performance énergétique des bâtiments - Méthode de calcul des déperditions calorifiques de base - Partie 3 : Charge thermique des systèmes de production d'eau chaude sanitaire et caractérisation des besoins, Module M8-2, M8-3

Energetische Bewertung von Gebäuden - Verfahren zur Berechnung der Energieanforderungen und Nutzungsgrade der Anlagen - Teil 3: Dimensionierung von Trinkwassererwärmungsanlagen und Bedarfsbestimmung, Modul M8-2, M8-3

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 foreword

This document (EN 12831-3:2017) 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 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 January 2018, and conflicting national standards shall be withdrawn at the latest by January 2018.

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 supersedes EN 15316-3-1:2007.

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

The changes made to the previous edition are minor editorial corrections:

a) minor improvement readability of Figure 4;

b) correction of an incorrect term in Formula (14);

c) correction of an incorrect symbol in Figure 14.

EN 12831, *Energy performance of buildings — Method for the calculation of the design heat load*, is composed with the following parts:

— *Part 1: Space heating load, Module M3-3*;

— *Part 2: Explanation and justification of EN 12831-1, Module M3-3* [CEN/TR];

— *Part 3: Domestic hot water systems heat load and characterisation of needs, Module M8-2, M8-3*;

— *Part 4: Explanation and justification of EN 12831-3, Module M8-2, M8-3* [CEN/TR].

According to the CEN-CENELEC Internal Regulations, the national standards organizations 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

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

— energy performance calculation for heating systems;

— inspection of heating systems;

— design of heating systems;

— installation and commissioning of heating systems.

This European Standard was developed to cover hourly and minutely time-steps.

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.

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.

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.

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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 (EN 12831-4).

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1 Scope

This European Standard describes a method to calculate the power and the storage volume required for the dimensioning of domestic hot water systems (DHW). The applicability ranges from direct water heaters (no storage volume and a comparatively large effective heating power) to larger storage systems with a comparatively small heating power and large storage volumes.

This European Standard is applicable to the following water storage systems:

— storage systems characterized by a minimal mixing zone, (such as stratified charging storage tanks or storage tanks with external heat exchangers): these systems are nominated in this standard as "charging storage systems";

— storage tank water heaters and warm water storage tanks with a pronounced mixing zone (such as DHW storage tanks with internal heat exchangers), nominated in this standard as "mixed storage systems";

and for different uses.

The Scope also includes standardization methods for determining the energy need for domestic hot water. This European Standard covers the domestic hot water needs in buildings.

The calculation of the energy needs for DHW-Systems applies to residential and non-residential buildings, a building or a zone of a building.

Figure 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.

Table 1 shows the relative position of this standard within the EPB package of standards.

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

	Overarching		Building (as such)		Technical Building Systems									
Sub module	**Descriptions**		**Descriptions**		**Descriptions**	**Heating**	**Cooling**	**Ventilation**	**Humidification**	**Dehumidification**	**Domestic Hot water**	**Lighting**	**Building automation and control**	**Electricity production**
sub1		**M1**		**M2**		**M3**	**M4**	**M5**	**M6**	**M7**	**M8**	**M9**	**M10**	**M11**
1	General		General		General	15316–1					15316–1			
2	Common terms and definitions; symbols, units and subscripts		Building Energy Needs		Needs						**12831–3**			
3	Applications		(Free) Indoor Conditions without Systems		Maximum Load and Power	12831–1					**12831–3**			
4	Ways to Express Energy Performance		Ways to Express Energy Performance		Ways to Express Energy Performance	15316–1					15316–1			
5	Building categories and Building Boundaries		Heat Transfer by Transmission		Emission and control	15316–2	15316–2							
6	Building Occupancy and Operating Conditions		Heat Transfer by Infiltration and Ventilation		Distribution and control	15316–3	15316–3				15316–3			
7	Aggregation of Energy Services and Energy Carriers		Internal Heat Gains		Storage and control	15316–5					15316–5 15316–4–3			

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	Overarching		Building (as such)		Technical Building Systems									
Sub module	**Descriptions**		**Descriptions**		**Descriptions**	**Heating**	**Cooling**	**Ventilation**	**Humidification**	**Dehumidification**	**Domestic Hot water**	**Lighting**	**Building automation and control**	**Electricity production**
sub1		**M1**		**M2**		**M3**	**M4**	**M5**	**M6**	**M7**	**M8**	**M9**	**M10**	**M11**
8	Building zoning		Solar Heat Gains		Generation									
8–1					Combustion boilers	15316–4–1					15316–4–1			
8–2					Heat pumps	15316–4–2	15316–4–2				15316–4–2			
8–3					Thermal solar Photovoltaics	15316–4–3					15316–4–3			15316–4–3
8–4					On-site cogeneration	15316–4–4					15316–4–4			15316–4–4
8–5					District heating and cooling	15316–4–5	15316–4–5							15316–4–5
8–6					Direct electrical heater	15316–4–8					15316–4–8			
8–7					Wind turbines									15316–4–10
8–8					Radiant heating, stoves	15316–4–8								
9	Calculated Energy Performance		Building Dynamics (thermal mass)		Load dispatching and operating conditions									
10	Measured Energy Performance		Measured Energy Performance		Measured Energy Performance	15378–3					15378–3			

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	Overarching		Building (as such)		Technical Building Systems									
Sub module	**Descriptions**		**Descriptions**		**Descriptions**	**Heating**	**Cooling**	**Ventilation**	**Humidification**	**Dehumidification**	**Domestic Hot water**	**Lighting**	**Building automation and control**	**Electricity production**
sub1		**M1**		**M2**		**M3**	**M4**	**M5**	**M6**	**M7**	**M8**	**M9**	**M10**	**M11**
11	Inspection		Inspection		Inspection	15378–1					15378–1			
12	Ways to Express Indoor Comfort			–	BMS									
13	External Environment Conditions													
14	Economic Calculation	15459–1												
NOTE	The shaded modules are not applicable.													

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