ICS 91.140.10 SLOVENSKÁ TECHNICKÁ NORMA Október 2017

| STN | **Energetická hospodárnosť budov<br>Vykurovacie systémy a systémy na ohrev úžitkovej vody v budovách<br>Časť 3: Meraná energetická hospodárnosť** | **STN<br>EN 15378-3<br><br>06 0804** |
|---|---|---|

Energy performance of buildings - Heating and DHW systems in buildings - Part 3: Measured energy performance, Module M3-10, M8-10

Táto norma obsahuje anglickú verziu európskej normy.
This standard includes the English version of the European Standard.

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English Version

# Energy performance of buildings - Heating and DHW systems in buildings - Part 3: Measured energy performance, Module M3-10, M8-10

Performance énergétique des bâtiments - Systèmes de chauffage et production d'eau chaude sanitaire dans les bâtiments - Partie 3 : Performance énergétique mesurée, Module M3-10, M8-10

Energetische Bewertung von Gebäuden - Heizungsanlagen und Trinkwassererwärmung in Gebäuden - Teil 3: Gemessene Gesamtenergieeffizienz, Module M3-10, M8-10

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

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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 15378-3:2017) 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of an identical text or by endorsement, at the latest by October 2017, and conflicting national standards shall be withdrawn at the latest by October 2017.

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

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.

# 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 group 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 1 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.

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 15378-4:2017).

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 is a new standard developed during mandate M480. It incorporates provisions previously stated in EN 15603:2008 and EN 15378:2008.

Default references to EPB standards other than EN ISO 52000-1:2017 are identified by the EPB module code number and they are given in Annex A (normative template) and Annex B (informative default choice).

NOTE 2 Example of EPB module code number: M5–5, or M5–5.1 (if module M5–5 is subdivided), or M5–5/1 (if reference to a specific clause of the standard covering M5–5).

# 1 Scope

This European Standard specifies methods to assess the delivered energy for space heating and domestic hot water energy performance of a building based on measurements during the operation and occupancy phase. This includes:

— assessment of the amount of delivered energy carriers for space heating and domestic hot water preparation based on measurement;

— assessment of the energy performance indicators of heating and domestic hot water systems and subsystems based on measurements.

This standard does not cover the measurement of delivered energy for ventilation, cooling, air conditioning and lighting systems.

This standard includes procedures to correct measured delivered energy according to climate and building use.

Weighting (e.g. conversion into primary energy, cost, $CO_2$ emission) of the measured delivered energy and assessment of the energy performance are covered in EN ISO 52000-1:2017.

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.

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

| | **Overarching** | | **Building (as such)** | | **Technical Building Systems** | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **SUbmodule** | **Descriptions** | | **Descriptions** | | **Descriptions** | **Heating** | **Cooling** | **Ventilation** | **Humidification** | **Dehumidification** | **Domestic Hot water** | **Lighting** | **Building automation and control** | **Electricity production** |
| **sub 1** | | **M1** | | **M2** | | **M3** | **M4** | **M5** | **M6** | **M7** | **M8** | **M9** | **M10** | **M11** |
| **1** | General | | General | | General | EN 15316–1 | | | | | EN 15316–1 | | | |
| **2** | Common terms and definitions; symbols, units and subscripts | | Building Energy Needs | | Needs | | | | | | EN 12831–3 | | | |
| **3** | Applications | | (Free) Indoor Conditions without Systems | | Maximum Load and Power | EN 12831–1 | | | | | EN 12831–3 | | | |
| **4** | Ways to Express Energy Performance | | Ways to Express Energy Performance | | Ways to Express Energy Performance | EN 15316–1 | | | | | EN 15316–1 | | | |
| **5** | Building categories and Building Boundaries | | Heat Transfer by Transmission | | Emission and control | EN 15316–2 | EN 15316–2 | | | | | | | |
| **6** | Building Occupancy and Operating Conditions | | Heat Transfer by Infiltration and Ventilation | | Distribution and control | EN 15316–3 | EN 15316–3 | | | | EN 15316–3 | | | |
| **7** | Aggregation of Energy Services and Energy Carriers | | Internal Heat Gains | | Storage and control | EN 15316–5 | | | | | EN 15316–5 15316–4–3 | | | |
| **8** | Building zoning | | Solar Heat Gains | | Generation | | | | | | | | | |
| **8–1** | | | | | Combustion boilers | EN 15316–4–1 | | | | | EN 15316–4–1 | | | |
| **8–2** | | | | | Heat pumps | EN 15316–4–2 | 15316–4–2 | | | | EN 15316–4–2 | | | |

| | Overarching | | Building (as such) | | Technical Building Systems | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SUbmodule | Descriptions | | Descriptions | | Descriptions | Heating | Cooling | Ventilation | Humidification | Dehumidification | Domestic Hot water | Lighting | Building automation and control | Electricity production |
| sub 1 | | M1 | | M2 | | M3 | M4 | M5 | M6 | M7 | M8 | M9 | M10 | M11 |
| **8–3** | | | | | Thermal solar Photovoltaics | EN 15316–4–3 | | | | | 15316–4–3 | | | 15316–4–3 |
| **8–4** | | | | | On-site cogeneration | EN 15316–4–4 | | | | | EN 15316–4–4 | | | EN 15316–4–4 |
| **8–5** | | | | | District heating and cooling | EN 15316–4–5 | EN 15316–4–5 | | | | | | | EN 15316–4–5 |
| **8–6** | | | | | Direct electrical heater | EN 15316–4–8 | | | | | EN 15316–4–8 | | | |
| **8–7** | | | | | Wind turbines | | | | | | | | | EN 15316–4–10 |
| **8–8** | | | | | Radiant heating, stoves | EN 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 | EN 15378–3 | | | | | EN 15378–3 | | | |
| **11** | Inspection | | Inspection | | Inspection | **EN 15378–1** | | | | | **EN 15378–1** | | | |
| **12** | Ways to Express Indoor Comfort | | | – | BMS | | | | | | | | | |
| **13** | External Environment Conditions | | | | | | | | | | | | | |
| **14** | Economic Calculation | EN 15459–1 | | | | | | | | | | | | |
| NOTE The shaded modules are not applicable | | | | | | | | | | | | | | |

## 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.

EN ISO 7345:1995, *Thermal insulation - Physical quantities and definitions (ISO 7345:1987)*

EN ISO 52000-1:2017, *Energy performance of buildings - Overarching EPB assessment - Part 1: General framework and procedures (ISO 52000-1:2017)*

EN 50379 (all parts), *Specification for portable electrical apparatus designed to measure combustion flue gas parameters of heating appliances*