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AUTOMAATIKA, JUHTSEADMETE JA HOONEHALDUSE
TOIME. MOODULID M10-4,5,6,7,8,9,10

Energy Performance of Buildings - Energy performance
of buildings - Part 1: Impact of Building Automation,
Controls and Building Management - Modules
M10-4,5,6,7,8,9,10

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

See Eesti standard EVS-EN 15232-1:2017 sisaldab Euroopa standardi EN 15232-1:2017 ingliskeelset teksti.	This Estonian standard EVS-EN 15232-1:2017 consists of the English text of the European standard EN 15232-1:2017.
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English Version

**Energy Performance of Buildings - Energy performance of
buildings - Part 1: Impact of Building Automation, Controls
and Building Management - Modules M10-4,5,6,7,8,9,10**

Performance énergétique des bâtiments - Partie 1:
Impact de l'automatisation, de la régulation et de la
gestion technique - Modules M10-4, 5, 6, 7, 8, 9, 10

Energieeffizienz von Gebäuden - Teil 1: Einfluss von
Gebäudeautomation und Gebäudemanagement -
Module M10-4, 5, 6, 7, 8, 9, 10

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.

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

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European foreword

This document (EN 15232-1:2017) has been prepared by Technical Committee CEN/TC 247 “Building Automation, Controls and Building Management”, the secretariat of which is held by SNV.

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of an identical text or by endorsement, at the latest by November 2017, and conflicting national standards shall be withdrawn at the latest by November 2017.

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

This document supersedes EN 15232:2012.

The most important changes are:

- respect the presentation of this project in the frame EPB in accordance with the drafting rules;
- a structured updated list of Building Automation and Control (BAC) functions;
- a set of new BMS function introduced in the new EPBD standard EN 16947-1 has been added to the list of functions thus completing the former TBM functions.

This document has been prepared under a mandate [22] given to CEN by the European Commission and the European Free Trade Association.

This document is part of the set of standards on the energy performance of buildings (the set of EPB standards).

In case this 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.

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 regional (e.g. Pan European) parties wanting to motivate their assumptions by classifying the building energy performance for a dedicated building stock.

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 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 “EPB set of standards”.

As part of the “EPB set of standards” it complies with the requirements for the set of basic EPB documents EN ISO 52000-1 (see Normative references), CEN/TS 16628 and CEN/TS 16629 (see Bibliography [2] and [3]) developed under a mandate given to CEN by the European Commission and the European Free Trade Association (Mandate M/480).

The standards issued by TC 247 for M/480 belong to the EPB set of standards and are in line with the over-arching standard (EN ISO 52000-1) and drafted in accordance with the basic principles and detailed technical rules developed in the Phase I of the mandate.

Also these standards are clearly identified in the modular structure developed to ensure a transparent and coherent EPB standard set. BAC (Building Automation and Control) is identified in the modular structure as Technical Building System M10. However, the standards of TC 247 deal with control accuracy, control functions and control strategies using standards communications protocol (these last standards do not belong to the EPB standards set).

To avoid a duplication of calculation due to the BAC (avoid double impact), no calculation are done in BAC EPB standard set, but in each underlying standard of EPB set of standards (from M1 to M9 in the Modular Structure), an IDENTIFIER developed and present in the M10 covered by EN 15232-1 is used where appropriate. These way of interaction is described in detailed in the Technical Report (CEN ISO/TR 52000-2) accompanying the over-arching standard. As consequence, the Annex A and Annex B concept as EXCEL sheet with the calculation formulas used in the EPB standards are not applicable for the standards issued by TC 247 for M/480.

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

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 15232-2 [5]).

1 Scope

This European Standard specifies:

- a structured list of control, building automation and technical building management functions which contribute to the energy performance of buildings; functions have been categorized and structured according to building disciplines and so called Building automation and control (BAC);
- a method to define minimum requirements or any specification regarding the control, building automation and technical building management functions contributing to energy efficiency of a building to be implemented in building of different complexities;
- a factor based method to get a first estimation of the effect of these functions on typical buildings types and use profiles;
- detailed methods to assess the effect of these functions on a given building.

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.

Table 1 — Position of this standard (in casu M10–4,5,6,7,8,9,10), within the modular structure of the set of EPB standards

	Over-arching	Building (as such)	Technical Building System									
Submodule	Descriptions	Descriptions	Descriptions	Heating	Cooling	Ventilation	Humidification	Dehumidification	Domestic Hot waters	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									
3	Application	(Free) Indoor Conditions without Systems	Maximum Load and Power									
4	Ways to Express Energy Performance	Ways to Express Energy Performance	Ways to Express Energy Performance								x	
5	Building Functions and Building Boundaries	Heat Transfer by Transmission	Emission and control								x	
6	Building Occupancy and Operating Conditions	Heat Transfer by Infiltration and Ventilation	Distribution and control								x	
7	Aggregation of Energy Services and Energy Carriers	Internal Heat Gains	Storage and control								x	
8	Building Partitioning	Solar Heat Gains	Generation and control								x	
9	Calculated Energy Performance	Building Dynamics (thermal mass)	Load dispatching and operating conditions								x	
10	Measured Energy Performance	Measured Energy Performance	Measured Energy Performance								x	
11	Inspection	Inspection	Inspection									
12	Ways to Express Indoor Comfort		BMS									
13	External Environment Conditions											
14 ^a	Economic Calculation											

^a 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 13779, *Ventilation for non-residential buildings — Performance requirements for ventilation and room-conditioning systems*

EN 15193-1, *Energy performance of buildings — Energy requirements for lighting*

EN 15243:2007, *Ventilation for buildings — Calculation of room temperatures and of load and energy for buildings with room conditioning systems*

EN 15316 (all parts), *Heating systems in buildings — Method for calculation of system energy requirements and system efficiencies*

EN 15316-2, *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*

EN 15316-4-5, *Energy performance of buildings — Method for calculation of system energy requirements and system efficiencies — Part 4-5: District heating and cooling, Module M3-8-5, M4-8-5, M8-8-5, M11-8-5*

EN 16798-5-1, *Energy performance of buildings — Modules M5-6, M5-8, M6-5, M6-8, M7-5, M7-8 — Ventilation for buildings — Calculation methods for energy requirements of ventilation and air conditioning systems — Part 5-1: Distribution and generation (revision of EN 15241) — Method 1*

EN 16798-7, *Energy performance of buildings — Part 7: Ventilation for buildings — Modules M5-1, M5-5, M5-6, M5-8 — Calculation methods for the determination of air flow rates in buildings including infiltration*

EN 16798-9, *Energy performance of buildings — Part 09: Ventilation for buildings — Module M4-1, M4-4, M4-9 — Calculation methods for energy requirements — Calculation methods for energy requirements of cooling systems — General*

EN 16798-13, *Energy performance of buildings — Part 13: Module M4-8 — Calculation of cooling systems — Generation*

EN 16798-15, *Energy performance of buildings — Part 15: Module M4-7 — Calculation of cooling systems — Storage — General*

EN 16947 series, *Energy Performance of Buildings — Building Management*

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

EN ISO 50001:2011, *Energy management systems — Requirements with guidance for use (ISO 50001:2011)*

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

EN ISO 52016-1, *Energy performance of buildings — Energy needs for heating and cooling, internal temperatures and sensible and latent heat loads — Part 1: Calculation procedures (ISO 52016-1)*