SLOVENSKI STANDARD
oSIST prEN 12098-1:2021

01-september-2021

Energijske lastnosti stavb - Naprave za regulacijo sistemov za ogrevanje - 1. del: Naprave za regulacijo toplovodnih sistemov za ogrevanje - Moduli M3-5, 6, 7, 8

Energy Performance of Buildings - Controls for heating systems - Part 1: Control equipment for hot water heating systems - Modules M3-5, 6, 7, 8

Engergieeffizienz von Gebäuden - Mess-, Steuer- und Regeleinrichtungen für Heizungen - Teil 1: Regeleinrichtungen für Warmwasserheizungen - Module M3-5, 6, 7, 8

Performance énergétique des bâtiments - Régulation pour les systèmes de chauffage - Partie 1 : Equipement de régulation pour les systèmes de chauffage à eau chaude - Modules M3-5, 6, 7, 8

Ta slovenski standard je istoveten z: **prEN 12098-1**

ICS:

91.140.10	Sistemi centralnega ogrevanja	Central heating systems
97.120	Avtomatske krmilne naprave za dom	Automatic controls for household use

oSIST prEN 12098-1:2021 **en,fr,de**

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

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ICS 91.140.10; 97.120

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English Version

Energy performance of buildings - Controls for heating systems - Part 1: Control equipment for hot water heating systems - Modules M3-5, 6, 7, 8

Performance énergétique des bâtiments - Régulation pour les systèmes de chauffage - Partie 1 : Equipement de régulation pour les systèmes de chauffage à eau chaude - Modules M3-5, 6, 7, 8

Engergieeffizienz von Gebäuden - Mess-, Steuer- und Regeleinrichtungen für Heizungen - Teil 1: Regeleinrichtungen für Warmwasserheizungen - Module M3-5, 6, 7, 8

This draft European Standard is submitted to CEN members for enquiry. It has been drawn up by the Technical Committee CEN/TC 247.

If this draft becomes a European Standard, 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.

This draft European Standard was established by CEN 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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Recipients of this draft are invited to submit, with their comments, notification of any relevant patent rights of which they are aware and to provide supporting documentation.

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

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

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European foreword

This document (prEN 12098-1:2021) has been prepared by Technical Committee CEN/TC 247 “Building Automation, Controls and Building Management”, the secretariat of which is held by SNV.

This document is currently submitted to the CEN Enquiry.

This document will supersede EN 12098-1:2017 and EN 12098-5:2017.

In comparison with the previous edition, the following technical modifications have been made:

— respecting the presentation of this project in the frame of EPB in accordance with the drafting rules;

— Clause 6.7 “Switching times” and Table 2 introducing networked clocks improvements in line with EN 12098-5 modifications have been updated. Consequently, EN 12098-5 becomes obsolete.

This document has been prepared under a Standardization Request 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 document is used in the context of national or regional legal requirements, mandatory choices could 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.

Introduction

This document is part of a series of standards aiming at international harmonization of the methodology for the assessment of the energy performance of buildings, called the "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 Clause 2), CEN/TS 16628 and CEN/TS 16629 (see [2] and [3]) developed under a mandate given to CEN by the European Commission and the European Free Trade Association (M/480 [11]).

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 calculations are done in the BAC EPB standard set, but in each underlying standard of the EPB set of standards (from M1 to M9 in the Modular Structure), an IDENTIFIER developed and present in the M10 covered by EN ISO 52120-1:— [1] is used where appropriate. This way of interaction is described in detail in the Technical Report (CEN ISO/TR 52000-2) accompanying the over-arching standard. As a 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 document 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 document (CEN/TR 12098-6:—[2], [5]).

[1] Under preparation. Stage at the time of publication: prEN ISO 52120-1:2020.

[2] Under preparation. Stage at the time of publication: prCEN/TR 12098-6:2021.

1 Scope

This document applies to electronic control equipment for heating systems with water as the heating medium and a supply water temperature up to 120 °C.

This control equipment controls the distribution and/or the generation of heat in relation to the outside temperature and time and other reference variables.

This document covers also controllers that contain an integrated optimum start or an optimum start-stop control function.

Safety requirements on heating systems remain unaffected by this document.

The dynamic behaviour of the valves and actuators are not covered in this document.

A multi-distribution and/or multi-generation system needs a coordinated solution to prevent undesired interaction and is not part of this document.

Table 1 shows the relative position of this document 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 can cover more than one module and one module can be covered by more than one EPB standard, for instance a simplified and a detailed method, respectively.

Table 1 — Position of this document (in casu M3–5, 6, 7, 8), 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									
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									
10	Measured Energy Performance	Measured Energy Performance	Measured Energy Performance									
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 are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 60038, *CENELEC standard voltages (IEC 60038)*

EN 60529, *Degrees of protection provided by enclosures (IP Code) (IEC 60529)*

EN 60730-1, *Automatic electrical controls for household and similar use - Part 1: General requirements (IEC 60730-1)*

EN ISO 7345, *Thermal performance of buildings and building components - Physical quantities and definitions (ISO 7345)*

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

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN ISO 7345 and EN ISO 52000-1:2017 and the following apply.

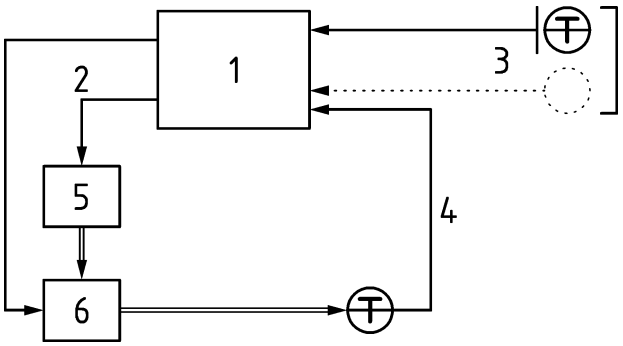
3.1
outside temperature compensated controller
OTC controller
controller optimizing and regulating the generation and/or distribution of heat in relation to the outside temperature, time and other reference variables

Note 1 to entry: The outside temperature compensated function calculates the flow (supply) temperature in relation to the outside temperature, based on the heating curve.

Note 2 to entry: The outside temperature optimum start-stop function calculates the pre-heat time and/or stop time to reach the comfort temperature level in relation with the outside temperature, switch time and several parameters (e.g. room temperature).

3.2
control equipment
equipment which consists of the OTC controller, and connectors for sensor input signals and output signals, but does not include the sensors and actuating equipment

Note 1 to entry: See Figure 1.



Key

1 OTC
2 output signals
3 input signals: reference variables
4 input signal: controlled variable
5 actuating equipment
6 heat generation or distribution

Figure 1 — Control equipment for heating systems

3.3
actuating equipment
equipment by which the controller affects the controlled variable

3.4
controlled variable
supply water temperature and/or boiler water temperature as a result of the heating curve in accordance to the reference variables

Note 1 to entry: The controlled variable is an input signal.

3.5
output signal
signal generated by the OTC controller for operating the actuating equipment

3.6
reference variable
outside temperature with or without other influences or variables (e.g. room temperature) used to determine the setpoint of the controlled variable

Note 1 to entry: The controlled variable is an input signal.

3.7
outside temperature
reference variable that is measured with a sensor fitted outside the building, mainly intended to measure the ambient air temperature

3.8
room temperature
resulting temperature in the building arising in comfort, economy or building protection operation mode of the OTC controller

Note 1 to entry: Room temperature can be different for individual rooms.

3.9
characteristic heating curve
relation between the setpoint value of the controlled variable (e.g. supply water temperature) and the reference variables (outside air temperature) defined by two or more parameters and depending on operation mode and additional variables

Note 1 to entry: The setpoint of supply water temperature is a function of the outside temperature and the present room temperature setpoint. The setpoint of supply water temperature as function of the outside temperature is graphically represented by the heating curve.

3.10
comfort operation mode
mode of operation between the switch-on time and the switch-off time, maintaining comfort room temperature

Note 1 to entry: Mode of operation for normally occupied rooms.

3.11
economy operation mode
mode of operation between the switch-off time and the switch-on time, maintaining a reduced room temperature compared to the comfort room temperature

Note 1 to entry: Economy operation mode is a reduced mode.

3.12
building protection operation mode

mode of operation between the switch-off time and the switch-on time, maintaining a room temperature required for building protection

Note 1 to entry: Building protection operation mode is a reduced mode.

3.13
automatic operation mode
mode of operation of equipment when significant control functions are not overridden by the user

Note 1 to entry: The operation mode is selected automatically according to the scheduler, actual date and time.

3.14
summer/winter switch function
seasonal switch on/off of the heating depending on a function of the outside air temperature

3.15
set back function
function, starting when the operation mode changes from comfort to economy or building protection mode

Note 1 to entry: During set back period, the heating is switched off until the calculated or measured room temperature drops below the economy or building protection setpoint; the operation mode switches back to comfort mode or the calculated switch-on time of the optimization start function is reached.