SLOVENSKI STANDARD
oSIST prEN 12098-1:2016
01-januar-2016

Regulacijske naprave za sisteme ogrevanja - 1. del: Naprave za regulacijo toplovodnih sistemov ogrevanja - Moduli M3-5, 6, 7, 8

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

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

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

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English Version

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

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

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.

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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

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European foreword

This document (prEN 12098-1:2015) has been prepared by Technical Committee CEN/TC 247 “Controls for heating systems”, the secretariat of which is held by SNV.

This document is currently submitted to the CEN Enquiry.

This document will supersede EN 12098-1:2013.

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

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 "EPB set of standards".

As part of the "EPB set of standards" it complies with the requirements for the set of basic EPB documents prEN ISO 52000-1:2015 (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), and supports essential requirements of EU Directive 2010/31/EC on the energy performance of buildings (EPBD).

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 (prEN ISO 52000-1:2015) 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 don't 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 is used where appropriate. These way of interaction is described in detailed in the Technical Report (prCEN 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.

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

Table 1 — Position of this standard within the EPBD set of 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									

	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**
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	Economic Calculation											

1 Scope

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

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

This standard 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 standard.

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

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

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 60038, *CENELEC standard voltage (IEC 60038)s*

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)*

prEN ISO 52000-1:2015, *Energy performance of buildings — Overarching EPB assessment – Part 1: General framework and procedures*

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

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN ISO 7345:1995, prEN ISO 52000-1:2015 and the following apply.

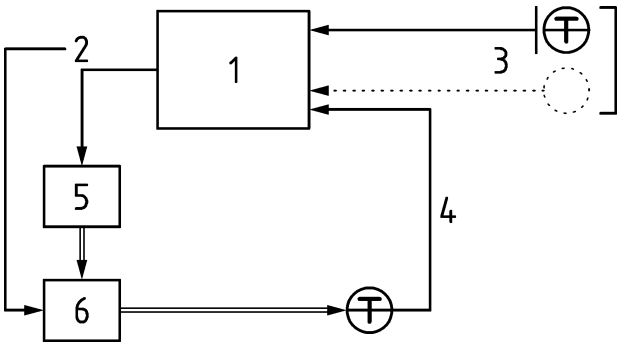
3.1
outside temperature compensated controller
OTC controller
controller optimizing and regulating the generation and/or distribution of heat in relation to the outside temperature, time and other reference variables

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, 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 signals
signals generated by the OTC controller for operating the actuating equipment

3.6
reference variables
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. flow water temperature) and the reference variables (outside temperature) defined by two or more parameters and depending on operation mode and additional variables

Note 1 to entry: The flow water temperature is a function of the outside temperature and the present room temperature setpoint. The 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-off time and the switch-on 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 automation and control
products, software, and engineering services for automatic controls, monitoring and optimization, human intervention, and management to achieve energy-efficient, economical, and safe operation of building services equipment

3.13
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.

3.14
automatic operation
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.

3.15
heating system zone
group of spaces connected to the same heating circuit

3.16
heated space
room or enclosure which for the purposes of a calculation is assumed to be heated to a given set-point temperature or set point temperatures

3.17
summer/winter switch function
seasonal switch on/off of the heating depending on a function of the outside temperature

3.18
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 set point; the operation mode switches back to comfort mode or the calculated switch-on time of the optimization start function is reached.

3.19
optimum start function
function, calculation the optimum pre-heat time to reach the comfort temperature level at the beginning of the comfort time period

Note 1 to entry: See Figure 2.

Note 2 to entry: The optimum start- and the optimum stop functions are illustrated by Figure 3. Heating periods are different from scheduled occupation periods. These differences, due to thermal inertia, depend mainly on heating loads (or temperature differences). A start and/or stop optimizer controls these switching points, using outside and/or room temperatures of their differences in relation to set points.