SLOVENSKI STANDARD
oSIST prEN 12098-5:2016

01-januar-2016

Regulacijske naprave za sisteme ogrevanja - 5. del: Nastavljalniki za zagon in ustavitev sistemov ogrevanja - Moduli M3-5, 6, 7, 8

Controls for heating systems - Part 5: Start-stop schedulers for heating systems - Modules M3-5,6,7,8

Mess-, Steuer- und Regeleinrichtungen für Heizungen - Teil 5: Schalteinrichtungen zur programmierten Ein- und Ausschaltung von Heizungsanlagen - Module M3-5, 6, 7, 8

Régulation pour les systèmes de chauffage - Partie 5 : Programmateurs d'intermittences pour les systèmes de chauffage - Modules M3-5, 6, 7, 8

Ta slovenski standard je istoveten z: prEN 12098-5

ICS:

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

oSIST prEN 12098-5:2016 en,fr,de

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

DRAFT
prEN 12098-5

December 2015

ICS 91.140.10; 97.120

Will supersede EN 12098-5:2005

English Version

Controls for heating systems - Part 5: Start-stop schedulers for heating systems - Modules M3-5,6,7,8

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Mess-, Steuer- und Regeleinrichtungen für Heizungen - Teil 5: Schalteinrichtungen zur programmierten Ein- und Ausschaltung von Heizungsanlagen - 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

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Ref. No. prEN 12098-5:2015 E

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European foreword

This document (prEN 12098-5:2015) 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 12098-5:2005.

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 equipment which controls scheduling heating systems. The signals can be processed by using either analogue or digital techniques, or both.

It applies to start-stop control functions and sets minimum acceptable standards for functions, performance and documentation.

NOTE The start-stop function can be integrated within a main control device. In this case the controller would be expected to this standard for scheduling function.

Safety requirements on heating systems and heating control systems remain unaffected by this European Standard. The actuators and the dynamic behaviour of the valves are not covered in this European Standard. This control equipment may or may not be connected to a data network.

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 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)*

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
start-stop scheduler
device which switches heating modes affecting the heating control system according to a program

Note 1 to entry: See Figure 2.

3.2
start-stop timer
start-stop scheduler switching heating modes for a single programmed period, started by a user

3.3
switch times
points in time at which the scheduler switches from a mode to another one

3.4
mode
state of a device or system defining the manner by which it performs its functions

Note 1 to entry: A heating system or a heating controller should have many heating modes (or heating operation modes), e.g. normal, reduced, on, off, start, stand-by. It should be noted that other modes can also exist.

Note 2 to entry: Heating stand-by mode: in this mode, heating system is switched off and, if it applies, enable frost protection function. It's important to make a difference between the heating stand-by mode and a so-called device stand-by mode for mains powered equipment and house hold appliances. It concerns devices itself for non-operational, lowest power consumption mode which cannot be switched off (influenced) by the user and that may persist for an indefinite time.

3.5
output signal
signal generated by the scheduler to the control system for switch heating mode

Note 1 to entry: This signal can affect the controller or the actuating equipment or modify the room temperature controller set point.

3.6
program
memorised switch times, reproducing periods or periodic cycles, daily, weekly or yearly

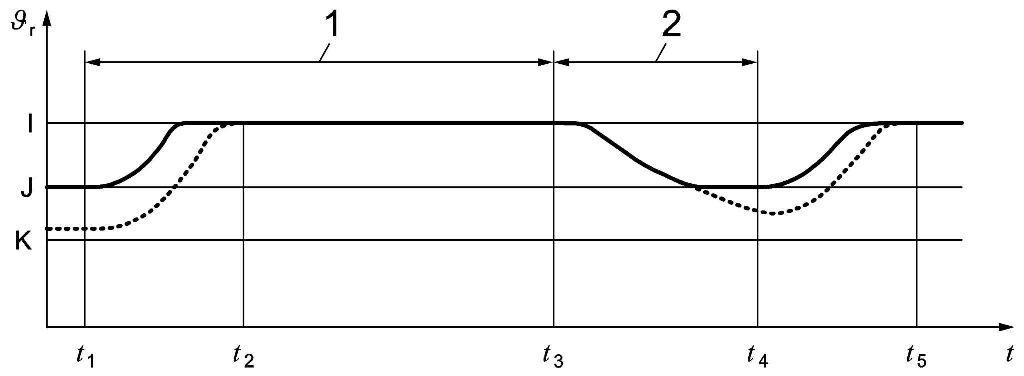
Note 1 to entry: Program may include periods for derogation, start period or tariff compensation functions.

3.7
type of daily program
daily program able to be reproduced for many days of the week or the year

3.8
derogation function
temporary override of the program

3.9
start period
operating period between switch-on heating time and the beginning of normal occupation period during which heating rises room temperature

Note 1 to entry: A start-stop optimiser controls the switch-on heating time modifying the start period in relation with measured variables (see prEN 12098–1:2015 and prEN 12098–3:2015). On a scheduler, start period set is a constant parameter, the switch-on time being fixed by start period and beginning of normal occupation period user settings.



Key

I, J, K modes e.g.:

t_1 : switch time to mode I

t_2 : beginning of occupation period

t_3 : switch time to mode J (or K)

t_1-t_3 : Period for mode I

t_2 – t_3 : normal occupation period for mode I

t_1 - t_2 : start period (heating up)

1 normal

2 reduced

Figure 1 — Example of temperature-time curve obtained by a mode scheduled controller

3.10
tariff compensation
function anticipating the switch time, related to the programmed switch time and tariff rising time

Note 1 to entry: This function make benefits, according to cost reflective message from electric utility (see prEN 12098–3:2015).

3.11
manual operation
during manual operation the mode of the scheduler is directly changed by the operator

3.12
clock retention time
duration which allows to recover the actual time after a power failure