



SLOVENSKI STANDARD
SIST-TP CEN/TR 16947-2:2018
01-maj-2018

Energijske lastnosti stavb - Sistem upravljanja stavb - 2. del: Razlaga in utemeljitev prEN 16947-1:2015 - Moduli M10-12

Building Management System - Part 2: Accompanying prEN 16947-1:2015 - Modules M10-12

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ICS:

35.240.67	Uporabniške rešitve IT v gradbeništvu	IT applications in building and construction industry
97.120	Avtomatske krmilne naprave za dom	Automatic controls for household use

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September 2016

ICS 91.120.10; 97.120

English Version

Building Management System - Part 2: Accompanying prEN 16947-1:2015 - Modules M10-12

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

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European foreword

This document (CEN/TR 16947-2:2016) 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 has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association.

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 is currently divided into the following parts:

- prEN 16947-12015, *Building Management System — Module M10-12* [currently at Enquiry stage];
- CEN/TR 16947-2:2016, *Building Management System —Part 2: Accompanying prEN 16947-1:2015 Modules M10-12.*

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CEN/TR 16947-2:2016 (E)

Introduction

The CENSE project, the discussions between CEN and the Concerted action highlighted the high page count of the entire package due to a lot of “textbook” information. This resulted in flooding and confusing the normative text.

A huge amount of informative contents shall indeed be recorded and available for users to properly understand, apply and nationally adapt the EPB standards.

The detailed technical rules CEN/TS 16629 Detailed Technical Rules ask for a clear separation between normative and informative contents:

- to avoid flooding and confusing the actual normative part with informative content;
- to reduce the page count of the actual standard;
- to facilitate understanding of the package.

Therefore each EPB standard shall be accompanied by an informative technical report, like this one, where all informative contents is collected.

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

Table 1 — Position of this standard within the EPD set of standards

Submodule	Over-arching Descriptions	Building (as such) Descriptions	Technical Building System									
			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									

	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
6	Building Occupancy and Operating Conditions	Heat Transfer by Infiltration and Ventilation	Distribution and control									
7	Aggregation of Energy Services and Energy Carriers	Internal Heat Gains	Storage and control									
8	Building Partitioning	Solar Heat Gains	Generation and control									
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								x	
13	External Environment Conditions											
14	Economic Calculation											

CEN/TR 16947-2:2016 (E)**1 Scope**

This Technical Report refers to prEN 16947-1:2015, *Building Management System — Module M10-12*.

It contains information to support the correct understanding, use and national adaption of prEN 16947-1:2015.

This Technical Report does not contain any normative provision.

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.

FprEN 15232-1:2016, *Energy performance of buildings — Part 1: Impact of Building Automation, Controls and Building Management — Modules M10-4,5,6,7,8,9,10*

prEN 15316-2:2015, *Heating systems and water based cooling systems in buildings — Method for calculation of system energy requirements and system efficiencies — Part 2: Space emission systems (heating and cooling)*

prEN 16947-1:2015, *Building Management System — Module M10-12*

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

EN ISO 13790, *Energy performance of buildings - Calculation of energy use for space heating and cooling (ISO 13790)*

prEN 16947-1:2015, *Building Management System — Module M10-12*

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

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 prEN 16947-1:2015 (the accompanied EPB standard) apply.

4 Symbols and abbreviations

For the purposes of this document, the symbols given in prEN ISO 52000-1:2015 and prEN 16947-1:2015 (the accompanied EPB standard) apply.

5 Method description**5.1 Effect of building automation and control (BAC) and technical building management (TBM)**

The key-role of Building Automation and Control and TBM is to ensure the balance between the desired human comfort - which shall be maximal, and energy used to obtain this goal - which shall be minimal!

The scope of BAC and TBM covers in accordance with their role from one side all Technical Building Systems (where the effect of the BAC is used in the calculation procedures) and from another side the global optimization of the energy performance of a building.

We could identify several categories of controls:

- Technical building systems specific controls; these controllers are dedicated to the physical chain of transformation of the energy, from generation, to storage, distribution and emission. We find them in the matrix starting with the modules M3-5 to M9-5 and finishing with M3-8 till M9-8. We could consider that it exist one controller by module, but some time one controller do the control among several modules. More often, these controllers are communicating between them via a standardized open bus, such as BACnet, KNX or LON
- BAC used for all or several technical building systems who do multidiscipline (heating, cooling, ventilation, DHW, lighting...) optimization and complex control functions. For example, one of them is INTERLOCK, a control function who avoids heating and cooling in same time.
- If all Technical Building System are used in the building, we have (depending of the size of the building) a Technical Building Management System. Specific global functions are implemented here, necessary to reach the key-role mentioned above. Usually, in this case, an interrelation with the building as such (Module M2) will occur, mainly to take in consideration the building needs; for example due to outside temperature, taken into account the inertia of the building when the control will reach the set point in a room.

In a control system dedicated to a building, who is BAC and TBM we can distinguish three main characteristics:

- Control Accuracy,
- Control Function,
- Control Strategy.

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Technical Building management systems are implemented to realize an overall building operation strategy by interdisciplinary orchestration of building energy systems (heating, cooling, ventilation, lighting) whereas systems are controlled by BAC functions. Further information about control accuracy and control functions can be found in the technical report CEN/TR 15232-2. EN 15232 describes two approaches how to evaluate the contribution of building automation and control on the energy performance of buildings. This Technical report is dedicated to control strategy and Technical building management issues covered by EN 16947-1.