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Components for BAC control loop - Sensors - Part 1: Room temperature sensors

Táto norma obsahuje anglickú verziu európskej normy.
This standard includes the English version of the European Standard.

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English Version

Components for BAC control loop - Sensors - Part 1: Room temperature sensors

Composants d'une boucle de régulation - Capteurs - Partie 1 : Capteurs de température

Komponenten für den BAC-Regelkreis - Sensoren - Teil 1: Raumtemperaturfühler

This European Standard was approved by CEN on 1 October 2023.

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EUROPEAN COMMITTEE FOR STANDARDIZATION
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European foreword

This document (EN 17690-1:2023) 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of an identical text or by endorsement, at the latest by May 2023, and conflicting national standards shall be withdrawn at the latest by May 2023.

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 part of a series of standards on Components of Building Automation and Control loop. A list of all parts in a series can be found on the CEN website.

Any feedback and questions on this document should be directed to the users’ national standards body. A complete listing of these bodies can be found on the CEN website.

According to the CEN-CENELEC Internal Regulations, the national standards organisations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Türkiye and the United Kingdom.

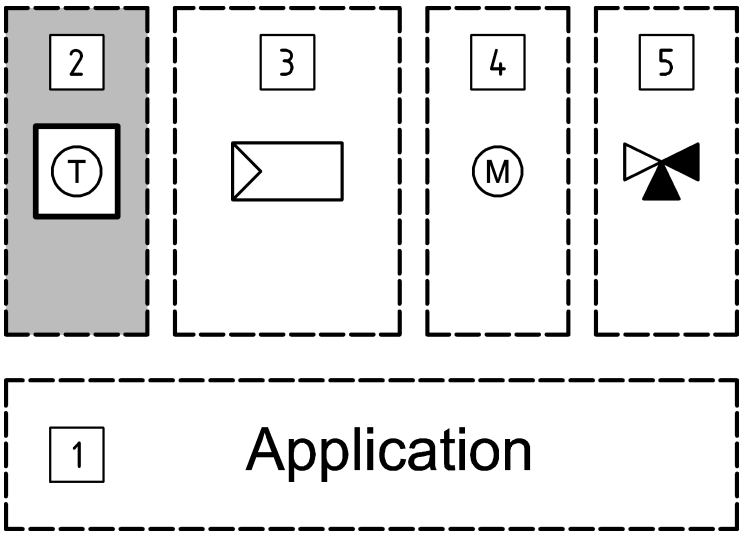
Introduction

Various EU Directives and National Regulations regarding energy saving and energy performance of buildings require proof of energy efficiency.

These requirements and rising energy costs are encouraging owners and occupiers of buildings to reduce their energy consumption. The cost for energy will be a critical factor in property rental and sale in the future.

Building Automation and Controls (BACs) have a strong impact on the energy performance of a building. This is shown in the existing Building Automation and Control (BAC) standards (mainly EN ISO 52120, parts 1 and 2, and EN 15500, parts 1 and 2). The standards also show the importance of BAC quality to achieve the desired comfort (e.g., human health and productivity) at maximum efficiency via control accuracy, BAC functions and BAC strategies.

For the measurement of the control accuracy (CA value) based on European standard EN 15500-1 and its accompanying Technical Report CEN/TR 15500-2, a controller is tested as part of a control loop, consisting of the loop elements: room temperature sensor, controller, actuator and valve as shown in Figure 1:



Key

1 application of a control loop (example water flow heating system)
2 temperature sensor
3 controller
4 actuator
5 valve

Figure 1 — Control loop

A controller can be used in combination with different control loop elements, if they fulfil the requirements of the interfaces to each other, and if the basic characteristics of the replaced control loop elements are the same.

This standard EN 17690 with its parts and some planned standards on valves and actuators will cover the different components used in conjunction with a BAC controller. All these components contribute to the control accuracy of a control loop. These standards will classify the components.

1 Scope

This document specifies requirements and test methods for room temperature sensors used to control the room temperature.

This document is applicable to wall mounted and flush mounted room temperature sensors.

The following aspects are not covered by this document:

— pendulum temperature sensors;

— ceiling mounted temperature sensor;

— extract air temperature sensors.

NOTE The measured value available at the output of the sensor is influenced by the place where the sensor device is located and factors such as air velocity, wall temperature, self/waste heating of the device and the air temperature. The perceived temperature, which is important for the well-being of a person, depends among other factors on air temperature, temperature of the surrounding walls and air flow rate as indicated in EN ISO 7730.

The temperature sensor element can be combined with other sensors in one device. This document only deals with the room temperature sensing of this devices. Other sensors are not covered except of their influence on the room temperature sensing (e.g. self-heating).

This document specifies sensor characteristics contributing to the determination of the control accuracy of individual zone controller according to EN 15500-1.

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 undated references, the latest edition of the referenced document (including any amendments) applies.

EN 215, *Thermostatic radiator valves — Requirements and test methods*

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)*

IEC 60721-3-2, *Classification of environmental conditions — Part 3-2: Classification of groups of environmental parameters and their severities — Transportation and Handling*

IEC 60721-3-3, *Classification of environmental conditions — Part 3-3: Classification of groups of environmental parameters and their severities — Stationary use at weatherprotected locations*