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Components for BAC control loops - Valve and actuator assemblies - Part 1: Water-based HVAC applications

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 loops - Valve and actuator assemblies - Part 1: Water-based HVAC applications

Composants pour les boucles d'automatisation et de régulation du bâtiment (BAC) - Ensembles vannes et actionneurs - Partie 1: Applications CVC à eau

Komponenten für BAC-Regelkreise - Armaturen und Antriebsbaugruppen - Teil 1: Wasserbasierte HLK-Anwendungen

This European Standard was approved by CEN on 10 November 2025.

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EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
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European foreword

This document (EN 17691-1:2025) 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of an identical text or by endorsement, at the latest by June 2026, and conflicting national standards shall be withdrawn at the latest by June 2026.

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.

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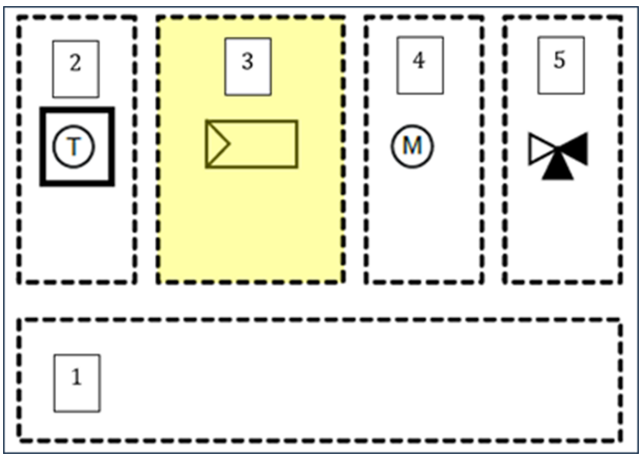
Introduction

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 (BAC) 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 52120-1 [1], CEN ISO/TR 52120-2 [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 ISO 52120-1 [1], CEN ISO/TR 52120-2 [2], EN 15500-1 [3] and its accompanying Technical Report CEN/TR 15500-2 [4], a controller is tested as part of a control loop, consisting of the loop elements room temperature sensor / controller / actuator / valve shown in Figure 1:



Key

1 application of a control loop (example water flow heating system)

2 sensor temperature

3 controller

4 actuator

5 valve

Figure 1 — Control loop elements

Both the controller as well as components contribute to the overall performance of a 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.

The EN 17691 series [5] and EN 17690-1 [6] 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 contribute to classify the components.

1 Scope

This document specifies requirements and test methods of valve-actuator assemblies in individual zone control of water-based HVAC applications.

This document does not apply to control valves of nominal diameter larger than DN50.

This document is applicable to pressure independent and pressure dependent control valve-actuator assemblies of relevant categories: 2-port, 3-port and 6-port valves (if they incorporate a control valve function).

Where a certain control loop as a combination of controller and valve-actuator assembly was assessed under EN 15500-1 [3], this document allows the assessment of the performance of combinations of that controller with different valve-actuator assemblies. The tests in this document ensure that valve/actuator assemblies, as components of control loops, can be replaced with products that provide comparable or better performance.

In hydronic system, valve-actuator assembly is a component of control loop that controls water flow rate according to the application control demand.

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 ISO 7345, *Thermal performance of buildings and building components - Physical quantities and definitions (ISO 7345:2018)*

EN 15500-1, *Energy Performance of Buildings - Control for heating, ventilating and air conditioning applications - Part 1: Electronic individual zone control equipment - Modules M3-5, M4-5, M5-5*

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