

GAASISEADMETE MEHAANILISED TERMOSTAADID

Mechanical thermostats for gas-burning appliances

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

<p>See Eesti standard EVS-EN 257:2022+A1:2023 sisaldab Euroopa standardi EN 257:2022+A1:2023 ingliskeelset teksti.</p> <p>Standard on jõustunud sellekohase teate avaldamisega EVS Teatajas.</p> <p>Euroopa standardimisorganisatsioonid on teinud Euroopa standardi rahvuslikele liikmetele kättesaadavaks 13.12.2023.</p> <p>Standard on kättesaadav Eesti Standardimis- ja Akrediteerimiskeskusest.</p>	<p>This Estonian standard EVS-EN 257:2022+A1:2023 consists of the English text of the European standard EN 257:2022+A1:2023.</p> <p>This standard has been endorsed with a notification published in the official bulletin of the Estonian Centre for Standardisation and Accreditation.</p> <p>Date of Availability of the European standard is 13.12.2023.</p> <p>The standard is available from the Estonian Centre for Standardisation and Accreditation.</p>
--	---

Tagasisidet standardi sisu kohta on võimalik edastada, kasutades EVS-i veebilehel asuvat tagasiside vormi või saates e-kirja meiliaadressile standardiosakond@evs.ee.

ICS 27.060.20

Standardite reprodutseerimise ja levitamise õigus kuulub Eesti Standardimis- ja Akrediteerimiskeskusele. Andmete paljundamine, taastekitamine, kopeerimine, salvestamine elektroonsesse süsteemi või edastamine ükskõik millises vormis või millisel teel ilma Eesti Standardimis- ja Akrediteerimiskeskuse kirjaliku loata on keelatud.

Kui Teil on küsimusi standardite autorikaitse kohta, võtke palun ühendust Eesti Standardimis- ja Akrediteerimiskeskusega: Koduleht www.evs.ee; telefon 605 5050; e-post info@evs.ee

The right to reproduce and distribute standards belongs to the Estonian Centre for Standardisation and Accreditation. No part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying, without a written permission from the Estonian Centre for Standardisation and Accreditation.

If you have any questions about copyright, please contact Estonian Centre for Standardisation and Accreditation: Homepage www.evs.ee; phone +372 605 5050; e-mail info@evs.ee

English Version

Mechanical thermostats for gas-burning appliances

Thermostats mécaniques pour appareils à gaz

Mechanische Temperaturregler für Gasgeräte

This European Standard was approved by CEN on 8 August 2022 and includes Amendment approved by CEN on 11 October 2023. This European Standard was corrected and reissued by the CEN-CENELEC Management Centre on 24 January 2024.

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. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the CEN-CENELEC Management Centre or to any CEN member.

This European Standard exists 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.

CEN members are the national standards bodies of 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 United Kingdom.



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

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

Contents	Page
European foreword.....	5
Introduction	6
1 Scope.....	8
2 Normative references.....	8
3 Terms and definitions	8
4 Classification.....	10
4.1 Classes of control.....	10
4.2 Groups of control.....	10
4.3 Classes of control functions.....	10
4.4 Types of <i>DC</i> supplied controls	11
5 Test conditions and uncertainty of measurements.....	11
6 Design and construction.....	11
6.1 General.....	11
6.2 Mechanical parts of the control	11
6.2.1 Appearance	11
6.2.2 Holes	11
6.2.3 Breather holes.....	11
6.2.4 Screwed fastenings.....	11
6.2.5 Jointing.....	11
6.2.6 Moving parts	11
6.2.7 Sealing caps.....	11
6.2.8 Dismantling and reassembly	11
6.2.9 Auxiliary canals and orifices.....	11
6.2.10 Presetting device.....	11
6.3 Materials.....	12
6.4 Gas connections	12
6.5 Electrical parts of the control	12
6.6 Protection against internal faults for the purpose of functional safety	12
6.101 Flow characteristics.....	12
6.102 Temperature adjustment.....	12
6.102.1 Range adjustment	12
6.102.2 Set-point adjustment	12
6.102.3 Fixed setting thermostat	12
7 Performance	13
7.1 General.....	13
7.1.101 Sequence of testing.....	13
7.2 Leak-tightness.....	14
7.2.1 Requirements.....	14
7.2.2 Tests.....	14
7.3 Torsion and bending.....	14
7.4 Rated flow rate.....	14
7.4.1 Requirement.....	14
7.4.2 Test.....	15

7.4.3	Conversion of air flow rate.....	15
7.5	Durability	15
7.6	Performance tests for electronic controls.....	15
7.7	Long-term performance for electronic controls	15
7.8	Data exchange.....	15
7.101	Calibration temperature set-point.....	15
7.101.1	Requirement.....	15
7.101.2	Test	15
7.102	Backlash.....	15
7.102.1	Requirement.....	15
7.102.2	Test	15
7.103	Opening of a snap-acting thermostat with a closed position.....	16
7.103.1	Requirement.....	16
7.103.2	Test	16
7.104	Opening pressure and closing pressure for thermostats with a closed position.....	16
7.104.1	Requirement.....	16
7.104.2	Test	16
7.105	Operating characteristic of the thermostat	16
7.105.1	Requirement.....	16
7.105.2	Test	17
7.106	Ambient temperature range of the body	20
7.106.1	Requirement.....	20
7.106.2	Test	20
7.107	Effect of storage and transport temperatures.....	21
7.107.1	Requirement.....	21
7.107.2	Test	21
7.108	Thermal overload of the temperature sensor.....	21
7.108.1	Requirement.....	21
7.108.2	Test	21
7.109	Operating torque of the thermostat set-point adjuster.....	21
7.109.1	Requirement.....	21
7.109.2	Test	21
7.110	Endurance	22
7.110.1	Requirement.....	22
7.110.2	Tests	22
8	Electrical requirements	23
9	Electromagnetic compatibility (EMC)	23
10	Marking, instructions.....	23
10.1	Marking.....	23
10.2	Instructions.....	23
10.3	Warning notice	24
Annex A (informative)	Abbreviations and Symbols.....	25
Annex B (informative)	Leak-tightness tests for gas controls – volumetric method.....	26
Annex C (informative)	Leak-tightness tests for gas controls – pressure loss method.....	27
Annex D (normative)	Conversion of pressure loss into leakage rate	28
Annex E (normative)	Electrical/electronic component fault modes	29
Annex F (normative)	Additional requirements for safety accessories and pressure accessories as defined in EU Directive 2014/68/EU	30

Annex G (normative) Materials for pressurized parts.....	31
Annex H (normative) Additional materials for pressurized parts.....	32
Annex I (normative) Requirements for controls used in <i>DC</i> supplied burners and appliances burning gaseous or liquid fuels.....	33
Annex J (normative) Method for the determination of the Safety Integrity Level (SIL).....	34
Annex K (normative) Method for the determination of a Performance Level (PL).....	35
Annex L (informative) Relationship between Safety Integrity Level (SIL) and Performance Level (PL).....	36
Annex M (normative) Reset functions.....	37
Annex N (informative) Guidance document on Environmental Aspects.....	38
Annex O (normative) Seals of elastomers, cork and synthetic fibre mixtures.....	39
Annex ZA (informative) Relationship between this European Standard and the essential requirements of Regulation (EU) 2016/426 aimed to be covered.....	40
Bibliography.....	43

European foreword

This document (EN 257:2022+A1:2023) has been prepared by Technical Committee CEN/TC 58 “Safety and control devices for burners and appliances burning gaseous or liquid fuels”, the secretariat of which is held by BSI.

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 2024, and conflicting national standards shall be withdrawn at the latest by October 2025.

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 supersedes A1 EN 257:2022 A1.

A1 deleted paragraphs A1

This document includes Amendment 1, approved by CEN on 2023-10-11.

The start and finish of text introduced or altered by amendment is indicated in the text by tags A1 A1

This document has been prepared under a Standardization Request given to CEN by the European Commission and the European Free Trade Association, and supports essential requirements of EU Directive(s).

For relationship with EU Directive(s), see informative Annex ZA, which is an integral part of this document.

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

This document is intended to be used in conjunction with EN 13611:2019.

EN 13611:2019 recognizes the safety level specified by CEN/TC 58 and is regarded as a horizontal standard dealing with the safety, construction, performance and testing of controls for burners and appliances burning gaseous and/or liquid fuels.

The general requirements for controls are given in EN 13611:2019, and methods for classification and assessment for new controls and control functions are given in EN 14459:2021 (see Figure 1). EN 126:2012 (see Figure 1) specifies multifunctional controls combining two or more controls and Application Control Functions, one of which is a mechanical control function. The requirements for controls and Application Control Functions are given in the specific control standard (see Figure 1, control functions).

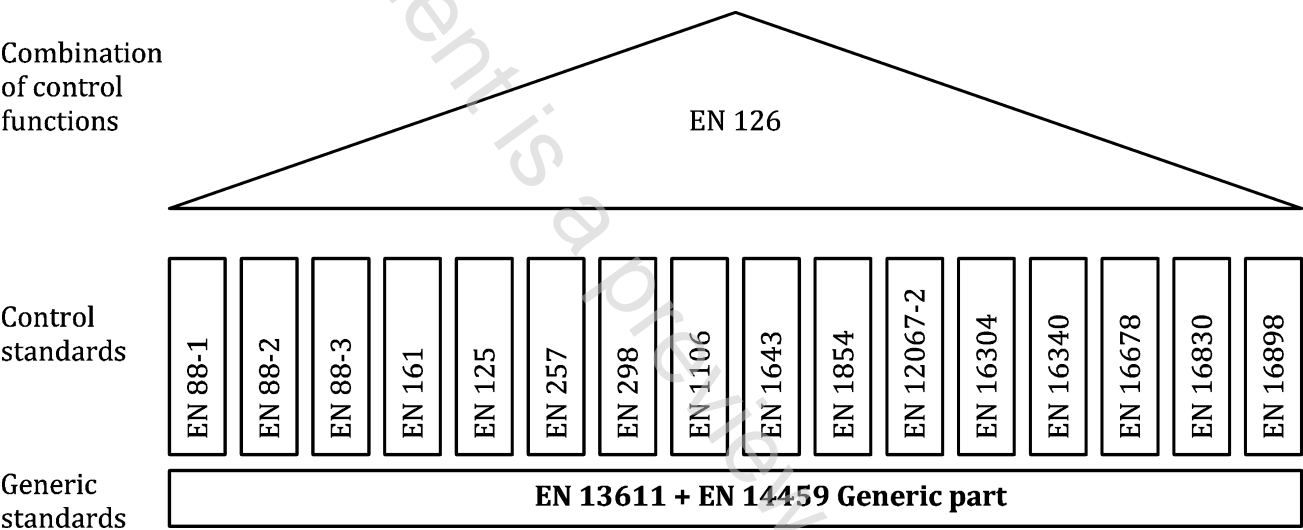


Figure 1 — Interrelation of control standards

EN 13611:2019 should be used in conjunction with the specific standard for a specific type of control (e.g. EN 88-1:2022, EN 88-2:2022, EN 88-3:2022, EN 125:2022, EN 126:2012, EN 161:2022, EN 257:2022, EN 298:2022, EN 1106:2022, EN 1643:2022, EN 1854:—1, EN 12067-2:2022, EN 16304:2022, EN 16340:2014, EN 16678:2022 and EN 16898:2022), or for controls for specific applications.

EN 13611:2019 can also be applied, so far as reasonable, to controls not mentioned in a specific standard and to controls designed on new principles, in which case additional requirements can be necessary. EN 14459:2021 provides methods for classification and assessment of new control principles.

Primarily in industrial applications it is common practice to rate the safety of a plant based on values describing the likelihood of a dangerous failure. These values are being used to determine Safety Integrity Levels or Performance Levels when the system is being assessed in its entirety.

CEN/TC 58 standards for safety relevant controls do go beyond this approach, because for a certain life time for which the product is specified, designed and tested a dangerous failure is not allowed at all. Failure modes are described and assessed in greater detail.

Measures to prevent from dangerous situations are defined. Field experience over many decades is reflected in the CEN/TC 58 standards. Requirements of EN 13611:2019 can be considered as proven in practice.

This document refers to clauses of EN 13611:2019 or adapts clauses by stating “with the following modification”, “with the following addition”, “is replaced by the following” or “is not applicable” in the corresponding clause.

This document adds clauses or subclauses to the structure of EN 13611:2019 which are particular to this document. Subclauses which are additional to those in EN 13611:2019 are numbered starting from 101. Additional Annexes are designated as Annex AA, Annex BB, Annex CC, etc. It should be noted that these clauses, subclauses and Annexes are not indicated as an addition.

If by reference to EN 13611:2019 the term “control” is given, this term should be read as “thermostat”.

This document is a preview generated by EVS

1 Scope

EN 13611:2019, Clause 1 applies with the following modification and addition:

Modification:

The 1st paragraph of EN 13611:2019, Clause 1 is replaced by:

This document specifies the safety, design, construction, and performance requirements and testing for mechanical thermostats intended for use with gas appliances and similar use, hereafter referred to as “thermostats”.

This document is applicable to thermostats with declared maximum inlet pressures up to and including 50 kPa and of nominal connection sizes up to and including DN 50 for use with one or more fuel gases.

Addition:

This document is applicable to thermostats controlling the gas flow directly or indirectly through an integral gas valve. This document applies to thermostats used with gas appliances which are not installed in the open air.

Thermostats dealt with in this document are intended for control functions.

This document is not applicable to:

- a) controls which use auxiliary energy (e.g. electrical energy supplied externally);
- b) an assessment of the control regarding Performance Level (PL) and Safety Integrity Level (SIL).

The 4th paragraph of EN 13611:2019, Clause 1 is removed.

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 13611:2019¹, *Safety and control devices for burners and appliances burning gaseous and/or liquid fuels — General requirements*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 13611:2019 and the following apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- IEC Electropedia: available at <https://www.electropedia.org/>
- ISO Online browsing platform: available at <https://www.iso.org/obp>

3.101

mechanical thermostat

thermostat which controls the temperature by adjusting the flow rate accordingly to the temperature of the sensor without any external energy, such that the temperature remains within defined limits

¹ As impacted by EN 13611:2019/AC:2021.