SLOVENSKI STANDARD
SIST EN 16830:2022

01-september-2022

Nadomešča:
SIST EN 16830:2017

Varnostne in nadzorne naprave za gorilnike in aparate na plin ali tekoča goriva - Regulacijske in nadzorne funkcije v elektronskih sistemih - Regulacija temperature

Safety and control devices for burners and appliances burning gaseous or liquid fuels - Control functions in electronic systems - Temperature Control function

Sicherheits- und Regeleinrichtungen für Brenner und Brennstoffgeräte für gasförmige oder flüssige Brennstoffe - Regelfunktionen in elektronischen Systemen - Temperaturüberwachungsfunktion

Équipements auxiliaires pour brûleurs et appareils utilisant des combustibles gazeux ou liquides - Dispositifs de contrôle des systèmes électroniques - Dispositifs de régulation de la température

Ta slovenski standard je istoveten z: **EN 16830:2022**

ICS:

27.060.20	Plinski gorilniki	Gas fuel burners
97.100.20	Plinski grelniki	Gas heaters

SIST EN 16830:2022 **en,fr,de**

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 16830

February 2022

ICS 91.140.40; 97.100.20

Supersedes EN 16830:2017

English Version

Safety and control devices for burners and appliances burning gaseous or liquid fuels - Control functions in electronic systems - Temperature Control function

Équipements auxiliaires pour brûleurs et appareils utilisant des combustibles gazeux ou liquides - Dispositifs de contrôle des systèmes électroniques - Dispositifs de régulation de la température

Sicherheits- und Regeleinrichtungen für Brenner und Brennstoffgeräte für gasförmige oder flüssige Brennstoffe - Regelfunktionen in elektronischen Systemen - Temperaturüberwachungsfunktion

This European Standard was approved by CEN on 26 December 2021.

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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.

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

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European foreword

This European standard (EN 16830:2022) 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 August 2022, and conflicting national standards shall be withdrawn at the latest by August 2022.

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 EN 16830:2017.

The following significant changes compared to the previous edition have been incorporated in this document:

— alignment with EN 13611:2019;

— terms and definitions are aligned to EN 13611:2019;

— clarification of the requirements for fault avoidance and fault tolerance;

— alignment with EN IEC 60730-2-9:2019[2];

— alignment with EN 60730-1:2016[1].

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, Turkey and the United Kingdom.

Introduction

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

The generic 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.

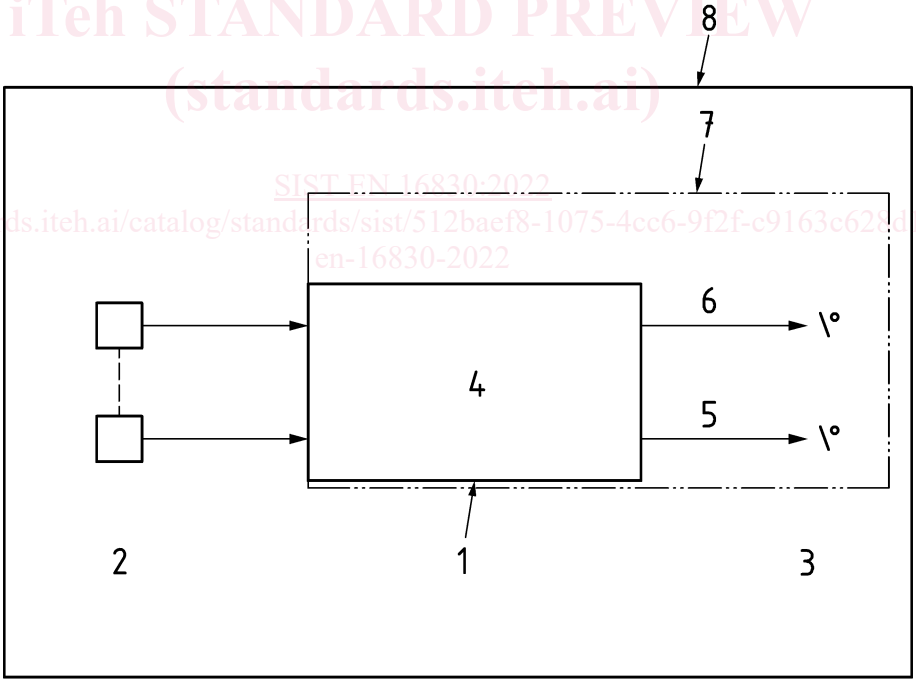
This control standard refers to clauses of EN 13611:2019 or adapts it by stating “with the following modification”, “with the following addition”, “is replaced by the following” or “is not applicable” in the corresponding clause. This document adds clauses or subclauses to the structure of EN 13611:2019 which are particular to this document, subclauses or annexes that are additional to those in EN 13611:2019 are numbered starting from 101 or are designated as Annex AA, BB, CC, etc.

This control standard describes requirements for two types of temperature-based Appliance Control Functions.

1) Temperature Control Function

The temperature control function (in the following called TCF) is a system that consists of temperature sensing, signal processing, switching actions (on/off or protective action) and reset (see Figure 1).

The purpose of a TCF is to control the temperature (temperature regulator) and to prevent the risk of excessive temperature (temperature limiter) which could lead to the hazard of overheating for gas and liquid fuel burning appliances.



Key

1	reset	5	protective action
2	sensing element(s)	6	on/off action
3	switching action(s)	7	control
4	temperature regulator and protective controller	8	temperature control function

Figure 1 — Temperature control function

2) TTB

The Appliance Control Function TTB (Combustion Product Discharge Safety Device) is intended to provide protection against poisoning and suffocation in case of a (partially) blocked flue. This document provides the requirements for electronic TTBs consisting of:

— a control that can take a protective action; and

— a sensing element that monitors a significant physical value in relation to the spillage of combustion products into the environment where the gas appliance is installed.

NOTE Instead of TTB, the term “Combustion Product Discharge Safety Device” is used in EN 15502–2–2.

1 Scope

This document specifies the safety, design, construction, performance requirements and testing of Temperature Control Functions (TCF) and Combustion Product Discharge Safety Devices (TTB) for gas and liquid fuel burners and appliances burning one or more gaseous or liquid fuels, hereafter referred to as 'TCF' or 'TTB'.

It also describes the test procedures for checking compliance with these requirements.

This document is applicable to AC and DC supplied TCF and TTB (for TCF and TTB supplied by stand-alone battery system, battery systems for mobile applications or systems which are intended to be connected to DC supply networks, see Annex I).

This document is applicable to electronically based TTB and TCF only.

For both TTB and TCF, the requirements in this document are applicable to the combination of sensing element and control.

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 13611:2019, *Safety and control devices for burners and appliances burning gaseous and/or liquid fuels - General requirements*

EN 60730-1:2016,[1] *Automatic electrical controls - Part 1: General requirements (IEC 60730-1:2013 + IEC 60730-1:2013/COR1:2014)*

EN IEC 60730-2-9:2019,[2] *Automatic electrical controls - Part 2-9: Particular requirements for temperature sensing control (IEC 60730-2-9:2015)*

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 httpss://www.iso.org/obp.

3.101
multifunctional control
MFC
combination of two or more controls and/or application control function(s) whereby the functional parts cannot operate if separated

[1] As impacted by EN 60730-1:2016/A1:2019.

[2] As impacted by EN IEC 60730-2-9:2019/A1:2019, EN IEC 60730-2-9:2019/A2:2020.

3.102
application control function
ACF
function to protect against harm(s) originating from a specific hazard by providing safe operation of gas burners and gas burning appliances

Note 1 to entry: The assembly to provide this function can consist of a combination of controls and/or multifunctional control(s) (e.g. actuators, sensors and control electronics).

3.103
combustion products discharge safety device
TTB
appliance control function that at least causes safety shutdown of the main burner when there is an unacceptable spillage of combustion products at the draught diverter

[SOURCE: EN 15502-2-2:2014, 3.1.4.101]

3.104
temperature control function
TCF
appliance control function that controls the temperature (temperature regulator) and prevents the risk of excessive temperature (temperature limiter) which could lead to the hazard of overheating in gas and liquid fuel burning appliances by initiating at least a safety shutdown of the main burner

4 Classification

4.1 Classes of control

4.1.1 TTB

A TTB control function can be class A, class B or class C, depending on the application. The class of the TTB control function shall be stated in the instructions.

4.1.2 TCF

The TCF shall be a class C control function.

A lower class is acceptable if this is proven by the analysis of the preventative measures within the appliance. The class of the TCF shall be stated in the instructions.

A TCF can consist of various independent hardware and software devices. These individual devices, being part of the TCF, shall be classified as class A, class B or class C.

4.2 Groups of control

EN 13611:2019, 4.2 is not applicable.

4.3 Classes of control functions

Shall be according to EN 13611:2019, 4.3.

4.4 Types of *DC* supplied controls

Shall be according to EN 13611:2019, 4.4.

5 Test conditions and uncertainty of measurements

Shall be according to EN 13611:2019, Clause 5.

6 Design and Construction

6.1 General

Shall be according to EN 13611:2019, 6.1.

6.2 Mechanical parts of the control

EN 13611:2019, 6.2 is not applicable.

6.3 Materials

EN 13611:2019, 6.3 is not applicable.

6.4 Gas Connections

EN 13611:2019, 6.4 is not applicable.

6.5 Electrical parts of the control

6.5.1 General

Shall be according to EN 13611:2019, 6.5.1 with the following addition:

The switching actions and the reset as indicated in Figure 1 are an integral part of the TCF. For multifunctional controls, the TCF or parts of it can be physically integrated in other functional blocks (e.g. automatic burner control system).

6.5.2 Switching elements

EN 13611:2019, 6.5.2 applies only to class C TCF and TTB which directly de-energize safety related output terminals controlling shutdown of the entire fuel supply to the appliance.

6.5.3 Electrical components

6.5.3.1 Performance of electrical components

Shall be according to EN 13611:2019, 6.5.3.1.

6.5.3.2 Tests

Shall be according to EN 13611:2019, 6.5.3.2.

6.5.3.3 Sensing element

Shall be according to EN 13611:2019, 6.5.3.3 with the following addition:

To withstand temperature overshoot after a protective action, the sensing element, being in contact with this temperature, shall be able to withstand a maximum temperature as declared in 7.1. This is the maximum temperature that the sensor will face in its application for a short period of time. During the long-term performance tests of 7.10.101 b) and d) this extreme temperature shall be maintained for 10 min each for the last 10 cycles.

The sensing element of the TTB shall not be removable without tools. Incorrect refitting, after servicing shall be made difficult.

For TCF Appliance Control Functions, where the safety depends on the correct location of the sensing elements, these sensing elements shall not be removable without tools. Incorrect refitting after servicing shall be made difficult.

For TTB and TCF based on sensors other than temperature sensors, equivalent requirements shall be applied.

6.5.3.4 Gas controls employing electrical components in the gas circuit

EN 13611:2019, 6.5.3.4 is not applicable.

6.6 Protection against internal faults for the purpose of functional safety

6.6.1 Design and construction requirements

6.6.1.1 Fault avoidance and fault tolerance

6.6.1.1.1 General

Shall be according to EN 13611:2019, 6.6.1.1.1 with the following additions:

a) A TCF shall be a class C control function. The requirements for protection against internal faults for the purpose of functional safety as given in 6.6.4 shall apply. The fault reaction time shall be stated in the instructions.

b) For TTB classified as class B control function the requirements for protection against internal faults for the purpose of functional safety as given in 6.6.3 shall apply. The fault reaction time shall be stated in the instructions with a limit of 24 h.

c) For TTB classified as class C control function the requirements for protection against internal faults for the purpose of functional safety as given in 6.6.4 shall apply. The fault reaction time shall be stated in the instructions.

6.6.1.1.2 Design

Shall be according to EN 13611:2019, 6.6.1.1.2.

6.6.1.2 Lock-out function

Shall be according to EN 13611:2019, 6.6.1.2.

6.6.1.3 Reset device

Shall be according to EN 13611:2019, 6.6.1.3.

6.6.1.4 Design Documentation

Shall be according to EN 13611:2019, 6.6.1.4.

6.6.2 Class A

Shall be according to EN 13611:2019, 6.6.2.

6.6.3 Class B

6.6.3.1 Design and construction requirements

Shall be according to EN 13611:2019, 6.6.3.1.