

STN	Bezpečnostné a ovládacie zariadenia horákov a spotrebičov na plynné alebo kvapalné palivá Ovládacie funkcie v elektronických systémoch Ovládacia funkcia teploty	STN EN 16830 06 1814
------------	---	--

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

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

Táto norma bola oznámená vo Vestníku ÚNMS SR č. 06/17

Obsahuje: EN 16830:2017

125049

Úrad pre normalizáciu, metrológiu a skúšobníctvo Slovenskej republiky, 2017
Podľa zákona č. 264/1999 Z. z. o technických požiadavkách na výrobky a o posudzovaní zhody a o zmene a doplnení niektorých zákonov v znení neskorších predpisov sa slovenská technická norma a časti slovenskej technickej normy môžu rozmnožovať alebo rozširovať len so súhlasom slovenského národného normalizačného orgánu.

EUROPEAN STANDARD

EN 16830

NORME EUROPÉENNE

EUROPÄISCHE NORM

March 2017

ICS 91.140.40; 97.100.20

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 23 October 2016.

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, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and United Kingdom.



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

CEN-CENELEC Management Centre: Avenue Marnix 17, B-1000 Brussels

Contents		Page
European foreword.....		4
Introduction		5
Figure 1 — Standards house.....		5
1	Scope	7
2	Normative references.....	7
3	Terms and definitions	7
4	Classification.....	8
4.1	Classes of control.....	8
4.2	Groups of control.....	8
4.3	Classes of control functions.....	8
4.4	Types of DC supplied controls	8
5	Test conditions and measurement tolerances	8
6	Construction requirements.....	8
6.1	General.....	8
6.2	Mechanical parts of the control	8
6.3	Materials.....	9
6.4	Gas Connections.....	9
6.5	Electrical parts of the control	9
6.5.1	General.....	9
6.5.2	Switching elements.....	9
6.5.3	Electrical components	9
6.6	Protection against internal faults for the purpose of functional safety.....	10
6.6.1	Design and construction requirements	10
6.6.2	Class A.....	10
6.6.3	Class B.....	10
6.6.4	Class C.....	11
6.6.5	Circuit and construction evaluation.....	11
6.7	TTB	11
6.7.1	General.....	11
6.7.2	Threshold value	11
6.8	TCF.....	12
7	Performance	12
7.1	General.....	12
7.2	Leak-tightness	12
7.3	Test for leak-tightness.....	12
7.4	Torsion and bending.....	12
7.5	Torsion and bending tests	12
7.6	Rated flow rate	12
7.7	Test for rated flow rate	13
7.8	Durability	13
7.8.1	Elastomers in contact with gas.....	13
7.8.2	Marking.....	13
7.8.3	Resistance to scratching.....	13

7.8.4	Resistance to humidity	13
7.9	Performance tests for electronic controls	13
7.9.1	At ambient temperature	13
7.9.2	At minimum temperature.....	13
7.9.3	At maximum temperature.....	13
7.10	Long-term performance for electronic controls	13
7.10.1	General	13
7.10.2	Stress test	13
7.10.3	Long term performance test.....	14
7.10.101	TCF Sensing element(s) assembly	14
7.10.102	TTB Sensing element(s) assembly	14
7.11	Data exchange	14
8	Electrical requirements.....	14
9	Electromagnetic compatibility (EMC)	15
10	Marking, installation and operating instructions.....	15
10.1	Marking	15
10.2	Installation and operating instructions	15
10.3	Warning Notice	15
Annex A (informative)	Abbreviations and Symbols.....	16
Annex B (informative)	Leak-tightness test for gas controls – volumetric method	17
Annex C (informative)	Leak-tightness test for gas controls – pressure loss method.....	18
Annex D (normative)	Conversion of pressure loss into leakage rate	19
Annex E (normative)	Electrical/electronic component fault modes	20
Annex F (normative)	Additional requirements for safety accessories and pressure accessories as defined in EU Directive 97/23/EC	21
Annex G (normative)	Materials for pressurized parts	22
Annex H (normative)	Additional materials for pressurized parts	23
Annex I (normative)	Requirements for controls used in DC supplied burners and appliances burning gaseous or liquid fuels.....	24
Annex J (normative)	Method for the determination of a Safety Integrity Level (SIL).....	25
Annex K (normative)	Method for the determination of a Performance Level (PL)	26
Annex L (informative)	Relationship between Safety Integrity Level (SIL) and Performance Level (PL).....	27
Annex M (normative)	Reset functions.....	28
Annex N (informative)	Guidance document on Environmental Aspects	29
Annex O (normative)	Seals of elastomer, cork and synthetic fibre mixtures	30
Bibliography	31

European foreword

This document (EN 16830:2017) 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 September 2017, and conflicting national standards shall be withdrawn at the latest by September 2017.

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.

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, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

Introduction

The generic requirements for controls are given in EN 13611 and methods for classification and assessment for new controls and control functions are given in EN 14459 (see Figure 1).

The requirements for controls are given in the specific control standard (see Figure 1).

Multifunctional Controls (MFC) according to EN 126:2012 and EN 126:2012/prA1:2014 with two or more controls and Application Control Functions, e.g. the Gas Shut-off Control Function, being inherently multifunctional controls. Each control integrated in the MFC should meet the applicable requirements of the relevant control standard(s). In addition, EN 126:2012 and EN 126:2012/prA1:2014 cover requirements for the safety related interactions between the different devices.

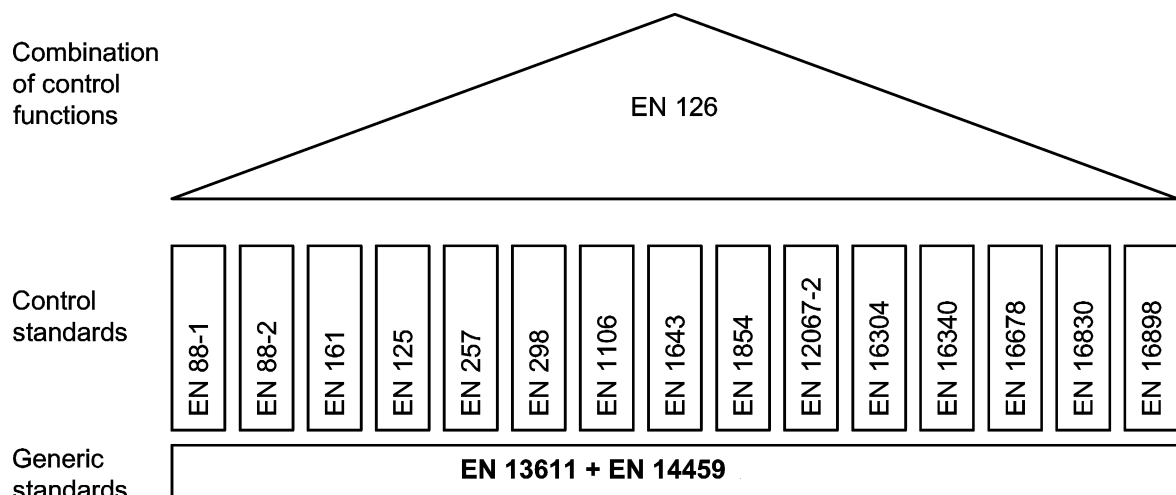


Figure 1 — Standards house

This control standard refers to clauses of EN 13611:2015 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 13611:2015 which are particular to this European Standard, i.e. subclauses or annexes that are additional to those in EN 13611:2015 are numbered starting from 101 or are designated as Annex AA, BB, CC etc. It should be noted that these clauses and subclauses are not indicated as an addition.

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 2).

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. A TCF requires a safety class C system, based on a comparison, made between an automatic burner controller and a temperature control function, the implication on safety of either function being considered equivalent. Gas and liquid fuel appliance standards can allow a lower safety class in combination with constructional measures, as long as the overall result for TCF is a safety class C.

EN 16830:2017 (E)

Traditional solutions, using a combination of mechanical thermostats as specified in the appliance standards (e.g. EN 15502-1) have been considered to fulfil the requirements. This assumption is based on specific mechanical solutions, originating from practice over many years and relying on redundancy as the principle.

2) TTB

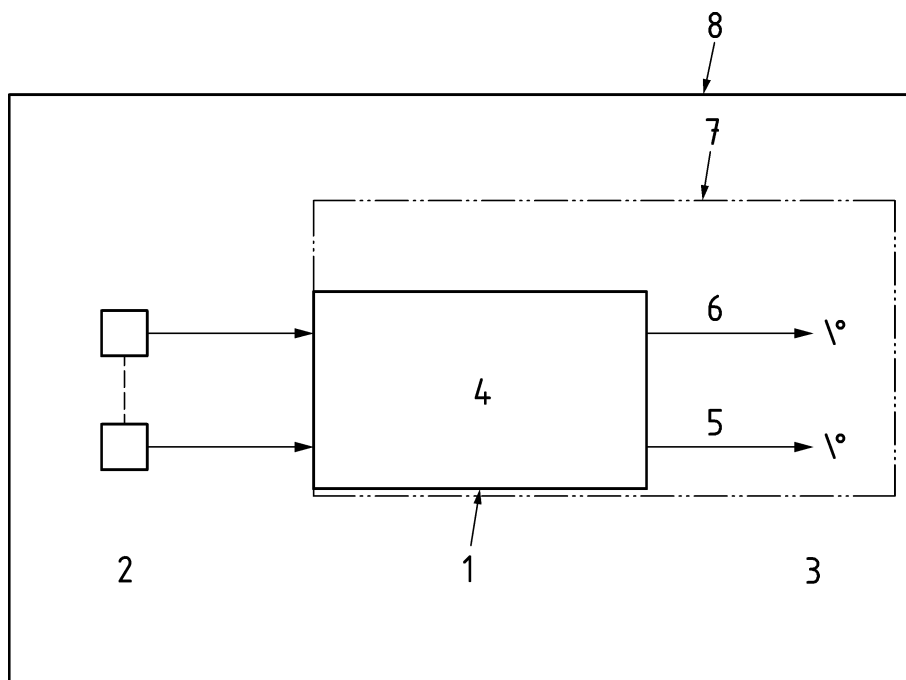
The Appliance Control Function TTB (Combustion Product Discharge Safety Device) is intended to provide protection against poisoning and suffocation in case of a (partially) blocked flue. This clause provides the requirements for electronic TTBs consisting of:

- 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.

If the spillage reaches a pre-set level, the TTB should initiate a protective action. Allowable spillage is determined by the application standard.

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

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

**Key**

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

Figure 2 — Temperature control function

1 Scope

This European Standard specifies the safety, design, construction and performance requirements for Temperature Control Function (TCF) and Combustion Product Discharge Safety Device (TTB) intended for use with burners and appliances using gaseous or liquid fuels.

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

This European Standard 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 European Standard is applicable to electronically based TTB and TCF only.

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.

EN 13611:2015, *Safety and control devices for burners and appliances burning gaseous and/or liquid fuels - General requirements*

EN 60730-2-9:2010, *Automatic electrical controls for household and similar use — Part 2-9: Particular requirements for temperature sensing controls (IEC 60730-2-9:2008, modified)*

koniec náhľadu – text ďalej pokračuje v platenej verzii STN