

Safety and control devices for burners and appliances
burning gaseous or liquid fuels - Control functions in
electronic systems - Methods for classification and
assessment

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

See Eesti standard EVS-EN 14459:2015 sisaldab Euroopa standardi EN 14459:2015 ingliskeelset teksti.	This Estonian standard EVS-EN 14459:2015 consists of the English text of the European standard EN 14459:2015.
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English Version

**Safety and control devices for burners and appliances
burning gaseous or liquid fuels - Control functions in
electronic systems - Methods for classification and
assessment**

Dispositifs de commande et de sécurité pour brûleurs
et appareils utilisant des combustibles gazeux ou
liquides - Fonctions de commande des systèmes
électroniques - Méthodes de classification et
d'évaluation

Sicherheits- und Regeleinrichtungen für Brenner und
Brennstoffgeräte für gasförmige oder flüssige
Brennstoffe - Regel- und Steuerfunktionen in
elektronischen Systemen - Verfahren für die
Klassifizierung und Bewertung

This European Standard was approved by CEN on 19 September 2015.

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.

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

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

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European foreword

This document (EN 14459:2015) 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 May 2016, and conflicting national standards shall be withdrawn at the latest by May 2016.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN [and/or CENELEC] shall not be held responsible for identifying any or all such patent rights.

This document supersedes EN 14459:2007.

Control systems are designed to control and protect gas and/or oil appliances and the combustion process. All functions are performed depending on their safety relevance within a specific tolerance of measures and time with a specific certainty under external influences and internal failures.

It was concluded by CEN/TC 58 that it is not always necessary to protect against the consequences of hazardous events with uniform measures as hazards differ in severity and the probability of unwanted occurrences may differ. As there exist large differences of interpretation on what level of protection is necessary against certain hazards, there is a need for guidance to bring the safety philosophy for gas and oil appliances and controls in line. The discussions of CEN/TC 58 regarding safety related control functions and the use of controls systems in the appliances show that it is worthwhile to refine the basic safety philosophy of gas and oil appliances into different risk levels.

For the evaluation of preventative measures concerning fault tolerance and avoidance of hazards, it is essential to classify control functions with regard to their fault behaviour. For the classification of control functions, their integration into the complete safety concept of the appliance should be taken into account.

In the appliance standards, only specific fault conditions are considered when controls conforming to CEN/TC 58 standards are used, e.g. flame simulation and air proving before each new start. In some cases (e.g. switch contacts) shorting is excluded, when certain tests have proven that the probability of a fault occurrence is low. For gas valves, a single shut-off valve is considered insufficient.

This standard will give methods for the assessment of products in the field of gas and oil applications and control solutions for which no specific product standards are actually available. The assessment is described in three steps:

- assessment of the application,
- translation into control requirements,
- assessment of the control solution,

leading to a defined safety class and a set of safety measures with additional/modified construction and test requirements for the application and/or the specified control function.

The assessment is focused on the controlled parameters (e.g. high/low temperature, pressure, flow, combustion quality) in the combustion process and in the functionality of the controls (e.g. open/closed; lock/unlock; start/stop). Each control function needs to be classified according to the required safety aspects (Class A, B, C).

To analyse the effect of fault conditions it is essential to know the specific application and the related risk.

It should be noted that the following significant editorial changes compared to the previous edition have been incorporated in this European Standard:

- a) methods for classification and risk assessment are more detailed;
- b) methods are described starting on appliance level;
- c) controls for burners and appliances burning liquid fuels (electronic) added;
- d) introduction of new informative annexes based on the determination of basic risks:
 - Annex AA "Example of a risk assessment method",
 - Annex BB "Example of a risk assessment with the method described in Annex AA" (former Annex M),
 - Annex CC "Realisation of a protective measure",
 - Annex DD "Hazards in gas and oil appliances handled by control functions" and
 - Annex EE "Classification of control functions based on the determination of basic Annex EE "Classification of control functions".
- e) deletion of the following annexes which shall be included into a new standard on temperature control functions (TCF) in CEN/TC 58:
 - Annex I "Combustion product discharge function (TTB)",
 - Annex K "Temperature control functions (TCF)",
 - Annex N "Control standards for gas burners and gas burning appliances".
- f) deletion of Annex L "Gas shut-off function" (content moved into EN 161);
- g) deletion of the former Annex O "Examples of new solutions" (content moved into EN 161).

According to the CEN/CENELEC Internal Regulations, the national standards organizations 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, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

1 Scope

This European Standard specifies methods for the classification and assessment of function blocks designed to operate burners and appliances burning gaseous or liquid fuels with particular regards to their fault behaviour and preventative measures.

This European Standard is applicable to control function blocks, not covered by a dedicated control standard (e.g. EN 88-1:2011, EN 88-2:2007, EN 125:2010, EN 126:2012, EN 126:2012/prA1:2014, EN 161:2011+A3:2013, EN 257:2010, EN 298:2012, EN 1106:2010, EN 1643:2014, EN 1854:2010, EN 12067-2:2004, EN 16304:2013 and EN 16340:2014, EN ISO 23553-1:2014).

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*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 13611:2015, Clause 3 and the following apply.

3.101

function block

part of an electric or electronic system which realises at least one control function with one input and one output signal

4 Classification

4.1 Classes of control

Shall be according to EN 13611:2015, 4.1.

4.2 Groups of control

Shall be according to EN 13611:2015, 4.2.

4.3 Classes of control functions

Shall be according to EN 13611:2015, 4.3 with the following addition:

The class of the control function shall be determined from the results of the risk assessment in 6.101 and specified in the installation and operating instructions.

4.4 Types of DC supplied controls

Shall be according to EN 13611:2015, 4.4.

5 Units of measurement and test conditions

Shall be according to EN 13611:2015, Clause 5.

6 Construction requirements

6.1 General

Shall be according to EN 13611:2015, 6.1 with the following addition:

The outcome of the specific assessment in 6.101 can modify or extend the requirements of 6.1 to 6.6.