

Irish Standard I.S. EN 13611:2015

Safety and control devices for burners and appliances burning gaseous and/or liquid fuels - General requirements

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#### I.S. EN 13611:2015

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## EUROPEAN STANDARD

# EN 13611

# NORME EUROPÉENNE

## EUROPÄISCHE NORM

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Supersedes EN 13611:2007+A2:2011

**English Version** 

# Safety and control devices for burners and appliances burning gaseous and/or liquid fuels - General requirements

Équipements auxiliaires pour brûleurs et appareils utilisant des combustibles gazeux ou liquides - Exigences générales

Sicherheits- und Regeleinrichtungen für Brenner und Brennstoffgeräte für gasförmige oder flüssige Brennstoffe -Allgemeine Anforderungen

This European Standard was approved by CEN on 14 February 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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### Contents

Foreword	5
Introduction	8
1 Scope	9
2 Normative references	10
3 Terms and definitions	16
4 Classification	20
5 Test conditions and uncertainty of measurements	21
6 Design and construction	22
7 Performance	39
8 Electrical requirements	54
9 Electromagnetic compatibility (EMC)	54
10 Marking, installation and operating instructions	56
Annex A (informative) Abbreviations and Symbols	58
Annex B (informative) Leak-tightness tests for gas controls – volumetric method	61
Annex C (informative) Leak-tightness tests for gas controls – pressure loss method	63
Annex D (normative) Calculation of pressure loss into leakage rate	65
Annex E (normative) Electrical/electronic component fault modes	66
Annex F (normative) Additional requirements for safety accessories and pressure accessories as defined in EU Directive 97/23/EC	69
Annex G (normative) Materials for pressurized parts	75
Annex H (normative) Additional materials for pressurized parts	77
Annex I (normative) Requirements for controls used in <i>DC</i> supplied burners and appliances burning gaseous or liquid fuels	86
Annex J (normative) Method for the determination of a Safety integrity level (SIL)	89
Annex K (normative) Method for the determination of a Performance Level (PL)	. 117
Annex L (informative) Relationship between Safety Integrity Level (SIL) and Performance Level (PL)	. 127
Annex M (normative) Reset functions	. 128
Annex N (informative) Guidance document on Environmental Aspects	. 132
Annex O (normative) Seals of elastomer, cork and synthetic fibre mixtures	. 135
Annex ZA (informative) Relationship between this European Standard and the Essential Requirements of EU Directive 2009/142/EC	. 142
Annex ZB (informative) Relationship between this European Standard and the Essential Requirements of EU Directive 97/23/EC	. 145
Bibliography	. 147

Figure 1 — Interrelation of control standards	8
Figure 2 — Fault tolerating time	17
Figure 3 — Types of connections	27
Figure 4 — Experimental setup for ignition testing	32
Figure 5 — Torsion test assembly	43
Figure 6 — Bending moment test assembly	44
Figure 7 — Flow rate test apparatus	46
Figure 8 — Scratch test apparatus	48
Figure B.1 — Leak-tightness tests apparatus (volumetric method)	62
Figure C.1 — Leak-tightness tests apparatus (pressure loss method)	64
Figure J.1 — Subsystem with basic architecture A – logical representation	97
Figure J.2 — Subsystem with basic architecture C - logical representation	98
Figure J.3 — Subsystem with basic architecture B - logical representation	99
Figure J.4 — Subsystem with basic architecture D logical representation	99
Figure J.5 — Example of complex architecture: Burner control system (symbolized schematic)	100
Figure J.6 — Example of a complex architecture: Reliability block diagram of a burner control system based on segregation into function blocks	101
Figure K.1 — Dependencies of nop, B10d, and PL	123
Figure K.2 — Weibull distribution example A (max. test duration 500 000 cycles)	124
Figure K.3 — Weibull distribution example B (max. test duration 1 000 000 cycles)	125
Figure K.4 — Subsystem with basic architecture B - logical representation	126
Figure O.1 — Gas permeability test setup for cork / elastomer material	138
Figure O.2 — Gas permeability test setup for cork / elastomer / synthetic fibre material	139
Table 1 — Gas connection sizes for Group 1	27
Table 2 — Gas connection sizes for Group 2	28
Table 3 — Maximum leakage rates	40
Table 4 — Torque and bending moment for Group 1	
Table 5 — Torque and bending moments for Group 2	42
Table 6 — Tightening torque for flange bolts	
Table 7 — Data exchange	52
Table 8 — Examples of defences against unauthorised access	
Table 9 — Test levels	
Table E.1 — Electrical/electronic component faults modes	
Table F.1 — Materials	70
Table F.2 — Non destructive testing	72
Table F.3 — Minimum inspection sample	73
Table G.1 — List of materials covered by harmonized standards	75
•	-

Table H.1 — List of materials which have been recognized as being safe	. 77
Table I.1 — Short-term voltage interruptions and decreases	. 87
Table I.2 — Electrical transient conduction immunity in accordance with ISO 7637-2:2011	. 88
Table I.3 — Electrical transient conduction immunity in accordance with ISO 7637-3:2007	. 88
Table J.1 — Diagnostic techniques	103
Table J.2 — Diagnostic measures	104
Table J.3 — Failure rates and failure modes	106
Table J.4 — Scoring electronics or sensors/actuators	111
Table J.5 — Calculation of $\beta$	111
Table J.6 — Requirements to the safe failure fraction of subsystems	115
Table J.7 — Determination of the overall Safety Integrity Level (SIL)	116
Table K.1 — Scoring process and quantification of measures against CCF	120
Table K.2 — Determination of the performance level (PL)	125
Table L.1 — Relationship between SIL and PL	127
Table N.1 — Environmental Checklist	133
Table 0.1 — Thickness tolerances	136
Table 0.2 — Performance of seal material	136
Table 0.3 — Performance of seal material after ageing	140
Table O.4 — Performance after immersion and drying	141
Table ZA.1 — Correspondence between this European Standard and Directive 2009/142/EC	142
Table ZB.1 — Correspondence between this European Standard and Directive 97/23/EC	145

### Foreword

This document (EN 13611:2015) 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 December 2015, and conflicting national standards shall be withdrawn at the latest by December 2015.

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 13611:2007+A2:2011.

This document has been prepared under a mandate 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 Annexes ZA and ZB, which are integral parts of this document.

Product specific control standards of CEN/TC 58 make use of this standard by adapting this standard and stating "addition", "modification" or "replacement" in their corresponding clauses.

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

- 1) Introduction, new text;
- 2) Clause 1 "Scope" reworded;
- 3) Clause 2 "Normative references" updated;
- 4) Clause 3 "Terms and definitions" updated and inclusion of some new definitions;
- 5) Clause 4 "Classification" new subclause 4.4 "Types of DC supplied controls";
- 6) Clause 5 new title "Test conditions and uncertainty of measurements" updated and inclusion of new subclauses 5.1 "Test conditions" and 5.2 "Uncertainty of measurements";
- 7) Clause 6 new title "Design and construction";
- 8) Subclause 6.1 "General" rewording of general requirements, additional requirements to cover the risk of high pressure;
- 9) Subclause 6.2 "Mechanical parts of the control" reworded and inclusion of new subclauses "Auxiliary canals and orifices" and "Presetting devices";
- 10) Subclause 6.3 "Materials" reworded, renumbered and modified requirements for housing and for zinc alloys, new test for zinc alloys;
- 11) Subclause 6.4 "Gas connections" reworded, updated and modified requirements;
- Subclause 6.5 "Electrical parts of the control" reworded and updated, inclusion of new subclause for switching elements (requirements and test), new subclause for electrical components in the gas way (requirements and test);

- 13) Subclause 6.6 "Protection against internal faults for the purpose of functional safety" reworded and updated, new subclause for lock-out function;
- 14) Subclause 7.1 "General" reworded and new requirements for AC/DC supplied controls;
- 15) Subclause 7.3 "Torsion and bending" reworded, updated and modified requirements;
- 16) Subclause 7.4 "Rated flow rate" reworded, updated and modified requirements;
- 17) Subclause 7.5 "Durability" reworded, updated and new requirements for Elastomer/cork and elastomer/cork/synthetic fibre material in contact with gas, new requirements for lubricants in contact with gas;
- 18) Subclause 7.6 "Performance tests for electronic controls" reworded, updated and modified;
- 19) Subclause 7.7 "Long-term performance for electronic controls" reworded, updated and modified;
- 20) New Subclause 7.8 "Data exchange" new requirements;
- 21) New Clause 8 "Electrical requirements" inclusion of updated requirements of EN 13611:2007+A2:2011, 8.11, inclusion of updated requirements of EN 13611:2007+A2:2011, 6.5.2;
- 22) New Clause 9 "Electromagnetic compatibility (EMC)" inclusion of reworded, updated and modified requirements of EN 13611:2007+A2:2011, Clause 8;
- 23) New Clause 10 "Marking, installation and operating instructions" inclusion of updated requirements of EN 13611:2007+A2:2011, Clause 9;
- 24) Replacement of Annex A (informative) "Gas connections in common use in various countries" by Annex A (informative) "Abbreviations and Symbols";
- 25) Annex E (normative) "Electrical/electronic component fault modes", reworded, updated and modified;
- 26) Annex F (normative) "Additional requirements for safety accessories and pressure accessories" reworded, updated and modified;
- 27) Subclause F.6.3 "Materials" new requirements;
- 28) Annex G (normative) "Materials for pressurized parts" updated;
- 29) Annex H (normative) "Additional materials for pressurized parts" updated;
- 30) Annex I (normative) "Requirements for controls used in DC supplied burners and appliances burning gaseous or liquid fuels" reworded, updated and modified;
- 31) Annex J (normative) "Method for the determination of a Safety integrity level (SIL)" reworded and updated;
- 32) Annex K (normative) "Method for the determination of a Performance Level (PL)" reworded and updated;
- 33) New Annex M (normative) "Reset functions";
- 34) New Annex N (informative) "Guidance document on Environmental Aspects";
- 35) New Annex O (normative) "Seals of elastomer, cork and synthetic fibre mixtures";
- 36) Complete update of the Annexes ZA, ZB and the Bibliography.

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, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

### Introduction

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

The general requirements for controls are given in this document and methods for classification and assessment for new controls and control functions are given in EN 14459:2007 (see Figure 1). EN 126 (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

This European Standard should be used in conjunction with the specific standard for a specific type of control, (e.g. EN 88-1:2011, EN 88-2:2007, EN 125:2010, EN 126:2012, 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), or for controls for specific applications. This standard 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 14459:2007 provides assessment methods for 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 span 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 these standards can be considered as proven in practice.

To be able to provide values for the parameters that are needed for the determination of a Safety Integrity Level or of a Performance Level, Annex J and Annex K of this document specifies a possible methodology to derive values for the relevant parameters from the requirements of this European Standard.

Only controls that conform to the relevant CEN/TC 58 control standard can be assessed for PL classification according to this amendment.

It cannot be presumed that any Safety Integrity Level or Performance Level assessment alone would imply that requirements of a CEN/TC 58 standard have been met.

### 1 Scope

This European Standard specifies the general safety, design, construction, and performance requirements and testing for safety, control or regulating devices (hereafter referred to as controls) for burners and appliances burning one or more gaseous fuels or liquid fuels. This European Standard is applicable to controls with declared maximum inlet pressure up to and including 500 kPa of nominal connection sizes up to and including DN 250.

This European standard specifies general product requirements for the following controls:

- automatic shut-off valves;
- automatic burner control systems;
- flame supervision devices;
- gas/air ratio controls;
- pressure regulators;
- manual taps;
- mechanical thermostats;
- multifunctional controls;
- pressure sensing devices;
- valve proving systems;
- automatic vent valves.

This European standard applies for control functions that are not covered by a specific control standard for burners and appliances burning one or more gaseous fuels or liquid fuels.

This European Standard applies also for safety accessories and pressure accessories with a product of the maximum allowable pressure PS and the volume V of less than 600 000 kPa  $\cdot$  dm<sup>3</sup> (6 000 bar $\cdot$  litres) or with a product of PS and DN of less than 300 000 kPa (3 000 bar).

This European Standard applies for *AC* and *DC* supplied controls (for controls supplied by stand-alone battery system, battery systems for mobile applications or systems which are intended to be connected to *DC* supply networks controls see Annex I).

This European Standard is applicable to reset functions used for reset from lockout, e.g. due to ignition failure or temperature cut-out in burners and appliances (see Annex M).

This European Standard establishes methodologies for the determination of a Safety Integrity Level (SIL) and the determination of a Performance Level (PL) (see Annex J, Annex K and Annex L).

This European Standard gives guidelines for environmental aspects (see Annex N).

This European Standard does not apply to mechanical controls for use with liquid fuels.

The protection against environmental impact in open air (i.e. capable of withstanding UV radiation, wind, rain, snow, dirt deposits, condensation, ice and hoar frost (see IEV 441-11-05:2005), earthquake and external fire) is not covered by this standard.

This European Standard should be used in conjunction with the specific control standard (see Bibliography).



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