



**NSAI**  
Standards

Irish Standard  
I.S. EN 298:2012

# Automatic burner control systems for burners and appliances burning gaseous or liquid fuels

## I.S. EN 298:2012

*Incorporating amendments/corrigenda/National Annexes issued since publication:*

The National Standards Authority of Ireland (NSAI) produces the following categories of formal documents:

I.S. xxx: Irish Standard – national specification based on the consensus of an expert panel and subject to public consultation.

S.R. xxx: Standard Recommendation - recommendation based on the consensus of an expert panel and subject to public consultation.

SWIFT xxx: A rapidly developed recommendatory document based on the consensus of the participants of an NSAI workshop.

*This document replaces:*

<i>This document is based on:</i>	<i>Published:</i>
EN 298:2012	29 May, 2012
EN 61228:1994	29 September, 1994

This document was published under the authority of the NSAI and comes into effect on:  
29 May, 2012

**ICS number:**

27.060.01

**NSAI**  
1 Swift Square,  
Northwood, Santry  
Dublin 9

T +353 1 807 3800  
F +353 1 807 3838  
E standards@nsai.ie  
W NSAI.ie

**Sales:**  
T +353 1 857 6730  
F +353 1 857 6729  
W standards.ie

Údarás um Chaighdeáin Náisiúnta na hÉireann

ICS 27.060.01

English Version

## Automatic burner control systems for burners and appliances burning gaseous or liquid fuels

Systèmes automatiques de commande pour brûleurs et  
appareils utilisant des combustibles gazeux ou liquides

Feuerungsautomaten für Brenner und Brennstoffgeräte für  
gasförmige oder flüssige Brennstoffe

This European Standard was approved by CEN on 9 March 2012.

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



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

**Management Centre: Avenue Marnix 17, B-1000 Brussels**

<b>Contents</b>	<b>Page</b>
Foreword.....	4
<b>1 Scope .....</b>	<b>6</b>
<b>2 Normative references .....</b>	<b>6</b>
<b>3 Terms and definitions .....</b>	<b>7</b>
<b>4 Classification.....</b>	<b>13</b>
<b>5 Units of measurement and test condition.....</b>	<b>13</b>
<b>6 Constructional requirements.....</b>	<b>14</b>
<b>7 Performance .....</b>	<b>18</b>
<b>8 EMC/Electrical requirements .....</b>	<b>30</b>
<b>9 Marking, installation and operating instructions .....</b>	<b>34</b>
<b>Annex A (informative) Gas connections in common use in the various countries .....</b>	<b>38</b>
<b>Annex B (informative) Leak-tightness test – Volumetric method.....</b>	<b>39</b>
<b>Annex C (informative) Leak-tightness – Pressure loss method .....</b>	<b>40</b>
<b>Annex D (normative) Conversion of pressure loss into leakage rate .....</b>	<b>41</b>
<b>Annex E (normative) Electrical/electronic component fault modes .....</b>	<b>42</b>
<b>Annex F (normative) Additional requirements for safety accessories and pressure accessories as defined in EU 97/23/EC .....</b>	<b>44</b>
<b>Annex G (normative) Materials for pressurized parts.....</b>	<b>45</b>
<b>Annex H (informative) Additional materials for pressurized parts.....</b>	<b>46</b>
<b>Annex I (normative) Requirements for controls used in DC supplied fuel burners and fuel burning appliances .....</b>	<b>47</b>
<b>Annex AA (informative) Functional characteristics of burner control systems, to be given by the appliance standard .....</b>	<b>49</b>
<b>Annex BB (informative) Fault modes of flame sensors.....</b>	<b>50</b>
<b>Annex CC (informative) Functional diagrams of oil burner control systems.....</b>	<b>52</b>
<b>Annex ZA (informative) Relationship between this European Standard and the Essential Requirements of EU Directive 2009/142/EC relating to appliances burning gaseous fuels .....</b>	<b>57</b>
<b>Bibliography .....</b>	<b>59</b>

## Figures

Figure 1 — Basic functional chain of a typical flame supervision .....	7
Figure 2 — Basic functional chain of an independent flame detector device .....	8
Figure 3 — Flame sensors for visible light .....	28
Figure 4 — Acoustic flame sensor.....	29
Figure CC.1 — Burner without pilot.....	54
Figure CC.2 — Burners with pilot which operates only during the ignition time .....	55
Figure CC.3 — Ignition restoration after loss of sensed flame during running position.....	55
Figure CC.4 — Recycling after loss of sensed flame during running position .....	56
Figure CC.5 — Lock-out after loss of sensed flame during running position.....	56
Figure CC.6 — Lock-out for the non-establishment of the flame signal (during safety time $t_s$ ) .....	56

## Tables

Table E.1 — Electrical/electronic component faults modes .....	42
Table AA.1 — Functional characteristics of gas burner control systems, to be given by the appliance standard .....	49
Table AA.2 — Functional characteristics of oil burner control systems, to be given by the appliance standard .....	49
Table BB.1 — Fault modes of flame sensors.....	50
Table CC.1 — Symbols .....	52
Table ZA.1 — Correspondence between this European Standard and Directive 2009/142/EC relating to appliances burning gaseous fuels.....	57

## Foreword

This document (EN 298:2012) 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 November 2012, and conflicting national standards shall be withdrawn at the latest by May 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 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 the relationship of this document with EU Directive(s), see informative Annex ZA, which is an integral part of this document.

This document supersedes EN 230:2005 and EN 298:2003.

This document refers to clauses of EN 13611:2007+A2:2011 and adapts them, indicating the changes by stating "with the following modification", "with the following addition", "is replaced by the following" or "is not applicable". It also adds clauses or sub-clauses to the structure of EN 13611:2007+A2:2011 which are particular to this standard (EN 298:2012). Additional sub-clauses or annexes are either numbered starting from 101 or are designated as Annex AA, BB, CC etc. It should be noted however that these clauses and sub-clauses are not indicated as additions in the text.

The following is a list of significant technical changes between this document and the previous editions:

- Alignment with EN 13611:2007+A2:2011;
- Integration of the requirements from EN 230 (EN 230 is merged into prEN 298);

NOTE If, due to the reference of EN 13611 the term "gas" will be part of a requirement or test, then the term "gas" shall be substituted by the term "fuel"

- Requirements from the flame supervision and the reactions in case of loss of flame have been adapted to modifications made in EN 267 and EN 676 and optimised for better understanding;
- Requirements and tests for "independent flame detectors" have been integrated;
- New requirements concerning "common cause" have been added;
- Requirements for the new function "remote reset from lock-out" have been added.

EN 298 compliance for burner control systems or flame detector devices cannot be claimed based upon SIL classification according to EN 61508.

SIL classification cannot be claimed based upon compliance with this standard only. A supplementary method for SIL determination is specified in EN 13611:2007+A2:2011, Annex J.

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, 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 the safety, construction and performance requirements for automatic burner control systems, programming units and flame detector devices, intended for use with gas and oil burners and gas and oil burning appliances, with or without fans and similar use.

This European Standard is applicable to automatic burner control systems that include additional functions.

This European Standard does not cover automatic burner control systems utilizing thermo-electric flame supervision devices.

NOTE 1 European Standards for burners, appliances or processes which use automatic burner control systems, programming units or flame detectors can override the requirements of this standard.

NOTE 2 Provisions for production control are not part of this European Standard.

## 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 267:2009+A1:2011, *Automatic forced draught burners for liquid fuels*

EN 1643, *Valve proving systems for automatic shut-off valves for gas burners and gas appliances*

EN 13611:2007+A2:2011, *Safety and control devices for gas burners and gas burning appliances — General requirements*

EN 14459:2007, *Control functions in electronic systems for gas burners and gas burning appliances — Methods for classification and assessment*

EN 60730-1:2011, *Automatic electrical controls for household and similar use — Part 1: General requirements (IEC 60730-1:2010 (modified))*

EN 60730-2-5:2002+A1:2004+A11:2005+A2:2010, *Automatic electrical controls for household and similar use — Part 2-5: Particular requirements for automatic electrical burner control systems (IEC 60730-2-5:2000+Am1:2004+Am2:2008, (modified))*

EN 60947-5-1:2004, *Low-voltage switchgear and controlgear — Part 5-1: Control circuit devices and switching elements — Electromechanical control circuit devices (IEC 60947-5-1:2003)*

IEV 191, *International Electrotechnical Vocabulary — Chapter 191: Dependability and quality of service (Consolidated version included Amendment 1 and Amendment 2); Identical with IEC 60050-191:1990-12 (Consolidated with IEC 60050-191/A1:1993-03 and IEC 60050-191/A2:2002-01)*



This is a free preview. Purchase the entire publication at the link below:

[Product Page](#)

- 
- [Looking for additional Standards? Visit Intertek Inform Infostore](#)
  - [Learn about LexConnect, All Jurisdictions, Standards referenced in Australian legislation](#)
-