

Automaatsed gaasipõleti kontrollsüsteemid ventilaatoriga või ilma ventilaatorita gaasipõletitele ja gaasipõletusseadmetele

Automatic gas burner control systems for gas
burners and gas burning appliances with or without
fans

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

<p>Käesolev Eesti standard EVS-EN 298:2003 sisaldab Euroopa standardi EN 298:2003 ingliskeelset teksti.</p> <p>Käesolev dokument on jõustatud 14.10.2003 ja selle kohta on avaldatud teade Eesti standardiorganisatsiooni ametlikus väljaandes.</p> <p>Standard on kättesaadav Eesti standardiorganisatsioonist.</p>	<p>This Estonian standard EVS-EN 298:2003 consists of the English text of the European standard EN 298:2003.</p> <p>This document is endorsed on 14.10.2003 with the notification being published in the official publication of the Estonian national standardisation organisation.</p> <p>The standard is available from Estonian standardisation organisation.</p>
--	---

<p>Käsitlusala: This European Standard specifies requirements for the construction and function, test methods and marking of automatic burner control systems and also programming units and their associated flame detector devices for gas burners and gas burning appliances with or without fans</p>	<p>Scope: This European Standard specifies requirements for the construction and function, test methods and marking of automatic burner control systems and also programming units and their associated flame detector devices for gas burners and gas burning appliances with or without fans</p>
---	---

ICS 27.060.20

Võtmesõnad:

English version

Automatic gas burner control systems for gas burners and gas burning appliances with or without fans

Systèmes automatiques de commande et de sécurité pour
brûleurs et appareils avec ou sans ventilateur utilisant les
combustibles gazeux

Feuerungsautomaten für Gasbrenner und Gasgeräte mit
oder ohne Gebläse

This European Standard was approved by CEN on 23 May 2003.

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 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 Management Centre has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Luxembourg, Malta, Netherlands, Norway, Portugal, Slovakia, Spain, Sweden, Switzerland and United Kingdom.



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

Management Centre: rue de Stassart, 36 B-1050 Brussels

Contents

Foreword.....	4
Introduction.....	5
1 Scope	5
2 Normative references	5
3 Terms and definitions.....	6
4 Classification.....	10
5 Conditions for testing and measuring tolerances.....	11
6 Constructional requirements.....	12
6.1 General.....	12
6.2 Protection provided by the enclosure	12
6.3 Electrical equipment.....	12
6.4 Electrical components.....	13
6.4.1 Performance of electrical components	13
6.4.2 Test.....	13
6.5 Long-term performance	13
6.5.1 General.....	13
6.5.2 Stress test and long-term performance test	13
7 Functional requirements	15
7.1 General.....	15
7.2 Programme	16
7.2.1 General.....	16
7.2.2 Safety actions.....	16
7.2.3 Flame failure	17
7.2.4 Recycling	17
7.2.5 Spark restoration	17
7.2.6 Supervision of other external devices during the start-up sequence.....	17
7.2.7 Start following safety shut down	17
7.2.8 Inter-purge and inter-waiting time.....	17
7.3 Times.....	17
7.3.1 General.....	17
7.3.2 Purge and waiting times.....	18
7.3.3 Safety times	18
7.3.4 Response time in case of flame failure	18
7.3.5 Reaction time to achieve safety shut-down	18
7.3.6 Reaction time to achieve lock-out.....	18
7.4 Flame detector device	18
7.5 Lock-out and reset device.....	19
7.5.1 Lock-out function.....	19
7.5.2 Reset device	19
7.6 Performance tests.....	19
7.6.1 At ambient temperature.....	19
7.6.2 At low temperature	20
7.6.3 At high temperature.....	20
8 Protection against environmental influences	20
8.1 Temperature range	20
8.2 Supply voltage variations	20
8.2.1 General.....	20
8.2.2 Requirements for operation below 85 % of rated voltage	20
8.3 Supply voltage dips, short interruptions and voltage variations immunity	21
8.3.1 General.....	21

8.3.2	Supply voltage dips, short interruptions and voltage variations test.....	22
8.4	Supply frequency variations.....	22
8.4.1	General.....	22
8.4.2	Supply frequency variations test	22
8.5	Surge immunity.....	23
8.5.1	General.....	23
8.5.2	Surge immunity test	23
8.6	Electrical fast transient/burst immunity	24
8.6.1	General.....	24
8.6.2	Electrical fast transient/burst immunity test.....	24
8.7	Electromagnetic conducted and radiated disturbances induced by radio-frequency fields.....	24
8.7.1	Immunity to conducted disturbances, induced by radio-frequency fields.....	24
8.7.2	Immunity to radiated disturbances, induced by radiated fields	25
8.8	Electrostatic discharge immunity	26
8.8.1	General.....	26
8.8.2	Electrostatic discharge immunity test.....	27
9	Protection against internal faults.....	27
9.1	Internal faults	27
9.1.1	General.....	27
9.1.2	Systems for non-permanent operation: first fault.....	27
9.1.3	Systems for non-permanent operation: second fault.....	28
9.1.4	System for permanent operation: first fault.....	28
9.1.5	System for permanent operation: second fault.....	28
9.1.6	Systems for permanent and non-permanent operation: faults during lock-out or safety- shut-down.....	28
9.2	Circuit and construction evaluation	29
9.2.1	Test conditions	29
9.2.2	Test criteria.....	29
10	Additional requirements for complex electronics.....	30
10.1	General.....	30
10.2	Fault avoidance and fault tolerance.....	30
10.3	Documentation.....	30
10.4	Assessment.....	31
11	Marking, installation and operating instructions	31
11.1	Marking	31
11.2	Installation and operating instructions	32
11.3	Warning note	33
Annex A (normative)	Electrical/electronic component fault modes	34
Annex B (informative)	Functional characteristics of burner control systems, to be given by the appliance standard	36
Annex C (normative)	Requirements for DC supplied burner.....	37
C.1	Scope	37
C.2	Thermal stress test.....	37
C.3	Long term performance test [by the manufacturer].....	37
C.4	At ambient temperature.....	37
C.5	Supply voltage variations	37
C.6	Supply voltage, supply frequency, surge immunity, electrical fast transient/burst, electromagnetic conducted disturbances	38
C.7	Electrical transient conduction immunity for Type B only.....	38
C.7.1	General.....	38
C.7.2	Electrical transient conduction immunity test.....	39
Annex ZA (informative)	Clauses of this European Standard addressing essential requirements or other provisions of EU Directives	40
Bibliography	42

Foreword

This document EN 298:2003 has been prepared by Technical Committee CEN /TC 58, "Safety and control devices for gas-burners and gas-burning appliances", 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 March 2004, and conflicting national standards shall be withdrawn at the latest by September 2006.

This document supersedes EN 298:1993.

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 annex ZA, which is an integral part of this document.

Annexes A and C are normative. Annex B is informative.

This document includes a Bibliography.

This European Standard covers type testing only.

Following a request from CEN/TC 58, CEN has agreed to defer the date of withdrawal of EN 298 :1993 for a transition period of 3 years.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Luxembourg, Malta, Netherlands, Norway, Portugal, Slovakia, Spain, Sweden, Switzerland and the United Kingdom.

Introduction

Whilst this European Standard is written primarily for Automatic Gas Burner Control Systems used on or in appliances for cooking, heating, hot water production, refrigeration, lighting or washing and having, where applicable, a normal water temperature not exceeding 105 °C, it can be usefully quoted, as a whole or in part, by standards for other equipment.

The functional characteristics of the automatic burner control systems, programming units, and their associated flame detector devices, in so far as they are not laid down in this standard, are given by the standards for the appliances for which the automatic burner control systems are intended.

This standard deals with immunity aspects of Electromagnetic Compatibility (EMC) only. Since automatic burner control systems are intended for use as an integrated or incorporated part of an appliance, further EMC tests (both immunity and emission) can be required for the intended use.

1 Scope

This European Standard specifies requirements for the construction and function, test methods and marking of automatic burner control systems and also programming units and their associated flame detector devices for gas burners and gas burning appliances with or without fans.

This standard also applies to automatic burner control systems, programming units and their associated flame detector devices that include additional functions.

Automatic burner control systems utilizing thermo-electric flame supervision devices are not covered by this standard.

This European Standard covers type testing only.

NOTE 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.

2 Normative references

This European Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text, and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies (including amendments).

ENV 50204, *Radiated electromagnetic field from digital radio telephones — Immunity test*.

EN 60068-2-6:1995, *Environmental testing — Part 2: Tests; tests Fc: Vibration (sinusoidal) (IEC 60068-2-6:1995 + Corrigendum:1995)*.

EN 60127-1, *Miniature fuses - Part 1: definitions for miniature fuses and general requirements for miniature fuse-links (IEC 60127-1:1988)*.

EN 60335-1:1994, *Safety of household and similar electrical appliances — Part 1: General requirements (IEC 60335-1:1991, modified)*.

EN 60529:2000, *Degrees of protection provided by enclosures (IP Code) (IEC 60529:1989)*.

EN 60730-1:2000, *Automatic electrical controls for household and similar use — Part 1: General requirements (IEC 60730-1:1999, modified)*.

EN 60730-2-5:2002, *Automatic electrical controls for household and similar use — Part 2-5: Particular requirements for automatic electrical burner control systems (IEC 60730-2-5:2000, modified).*

EN 60947-5-1:1997, *Low-voltage switchgear and controlgear — Part 5-1: Control circuit devices and switching elements; electromechanical control circuit devices (IEC 60947-5-1:1997).*

EN 61000-4-2, *Electromagnetic compatibility (EMC) — Part 4-2: Testing and measuring techniques; Electrostatic discharge immunity test (IEC 61000-4-2:1995).*

EN 61000-4-3, *Electromagnetic compatibility (EMC) - Part 4-3: Testing and measurement techniques; Radiated, radio-frequency, electromagnetic field immunity test (IEC 61000-4-3:2002).*

EN 61000-4-4, *Electromagnetic compatibility (EMC) — Part 4-4: Testing and measurement techniques; Electrical fast transient/burst immunity test (IEC 61000-4-4:1995).*

EN 61000-4-5, *Electromagnetic compatibility (EMC) — Part 4-5: Testing and measurement techniques; Surge immunity test (IEC 61000-4-5:1995).*

EN 61000-4-6, *Electromagnetic compatibility (EMC) — Part 4-6: Testing and measurement techniques; Immunity to conducted disturbances, induced by radio-frequency fields (IEC 61000-4-6:1996).*

EN 61000-4-11, *Electromagnetic compatibility (EMC) — Part 4-11: Testing and measurement techniques — Voltage dips, short interruptions and voltage variations immunity tests (IEC 61000-4-11:1994).*

EN 61558-2-6, *Safety of power transformers, power supply units and similar — Part 2-6: Particular requirements for safety isolating transformers for general use (IEC 61558-2-6:1997).*

EN 61558-2-17, *Safety of power transformers, power supply units and similar — Part 2-17: Particular requirements for safety isolating transformers for switch mode power supplies (IEC 61558-2-17:1997).*

ISO 7637-1, *Road vehicles - Electrical disturbances from conduction and coupling - Part 1: Definitions and general considerations.*

ISO 7637-2, *Road vehicles - Electrical disturbance by conduction and coupling - Part 2: Commercial vehicles with nominal 24 V supply voltage - Electrical transient conduction along supply lines only.*

IEC 60384-14, *Fixed capacitors for use in electronic equipment — Part 14: Sectional specification: Fixed capacitors for electromagnetic interference suppression and connection to the supply mains.*

IEC 60384-16, *Fixed capacitors for use in electronic equipment — Part 16: Sectional specification: Fixed metallized polypropylene film dielectric d.c. capacitors.*

3 Terms and definitions

For the purposes of this European Standard the following terms and definitions apply.

3.1

flame detector device

device by which the presence of a flame is detected and signalled;

it can consist of a flame sensor, an amplifier and a relay for signal transmission. These parts, with the possible exception of the actual flame sensor, can be assembled in a single housing for use in conjunction with a programming unit

3.2

flame sensor

actual flame-sensing element, the output signal or value of which is used as the input for the flame detector amplifier