SLOVENSKI STANDARD
oSIST prEN 125:2020

01-maj-2020

Naprave za nadzor plamena pri plinskih aparatih - Termoelektrična varovala

Flame supervision devices for gas burning appliances - Thermoelectric flame supervision devices

Flammenüberwachungseinrichtungen für Gasgeräte - Thermoelektrische Zündsicherungen

Dispositifs de surveillance de flamme pour appareils à gaz - Dispositifs thermoélectriques de surveillance de flamme

Ta slovenski standard je istoveten z: **prEN 125**

ICS:

27.060.20 Plinski gorilniki Gas fuel burners

oSIST prEN 125:2020 **en,fr,de**

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

DRAFT
prEN 125

May 2020

ICS 27.060.20

Will supersede EN 125:2010+A1:2015

English Version

Flame supervision devices for gas burning appliances - Thermoelectric flame supervision devices

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This draft European Standard is submitted to CEN members for enquiry. It has been drawn up by the Technical Committee CEN/TC 58.

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Recipients of this draft are invited to submit, with their comments, notification of any relevant patent rights of which they are aware and to provide supporting documentation.

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

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Ref. No. prEN 125:2020 E

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European foreword

This document (prEN 125:2020) 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 document is currently submitted to the CEN Enquiry.

This document will supersede EN 125:2010+A1:2015.

This document has been prepared under a standardization request 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.

This document is intended to be used in conjunction with EN 13611:2019. This document refers to clauses of EN 13611:2019 or adapts clauses 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 13611:2019 which are particular to this standard. It should be noted that these clauses and subclauses are not indicated as an addition. Subclauses which are additional to those in EN 13611:2019 are numbered starting from 101. Additional Annexes are designed as Annex AA, BB, CC, etc.

The following significant technical changes compared to the previous edition have been incorporated in this document:

a) alignment with EN 13611:2019;

b) updating of Clause 2, Normative references;

c) new declaration of nominal diameter and maximum inlet pressure.

1 Scope

This document specifies the safety, construction and performance requirements for thermoelectric flame supervision devices, energized by a thermocouple intended for use with gas burners, gas appliances and similar use, hereafter referred to as “controls”.

This document is applicable to controls with declared maximum inlet pressures up to and including 500 kPa (5 bar) of nominal connection sizes up to and including DN 50 for use with one or more fuel gases in accordance with EN 437.

This document is not applicable to:

a) the thermocouple;

b) controls which use auxiliary energy (e.g. electrical energy supplied externally).

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 13611:2019, *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 13611:2019 and the following apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- ISO Online browsing platform: available at https://www.iso.org/obp
- IEC Electropedia: available at http://www.electropedia.org/

3.101
thermocouple
thermoelectric flame sensing element that responds to the temperature of the supervised flame, and in which the flame effect produces an electromotive force (e.m.f.)

3.102
flame supervision device
control which, in response to the e.m.f. produced by the thermocouple, maintains the gas way to the main burner or the main burner and the pilot burner open and which shuts off the gas way to the main burner at least, after extinction of the supervised flame

Note 1 to entry: For further reference, see Figure AA.1 and Figure AA.2.

3.103
ignition interlock
part which prevents the igniter from operating as long as the main gas way is open

3.104
re-start interlock
mechanism which prevents the re-opening of the gas way to the main burner or to the main burner and the pilot burner until the armature plate has separated from the magnetic element

Note 1 to entry: For further reference, see Figure AA.1 and Figure AA.2.

3.105
sealing force
force acting on the closure member when the closure member is in the closed position, independent of any force provided by fuel gas pressure

3.106
closed position
position of the closure member(s) in the absence of the thermoelectric energy

4 Classification

4.1 Classes of control

EN 13611:2019, 4.1 is replaced by the following:

Controls shall be classified A, B or C according to the number of operations as tested in 7.105.2.2.

4.2 Groups of control

Shall be according to EN 13611:2019, 4.2.

4.3 Classes of control functions

EN 13611: 2019, 4.3 is not applicable.

4.4 Types of DC supplied controls

EN 13611:2019, 4.4 is not applicable.

5 Test conditions and uncertainty of measurements

Shall be according to EN 13611:2019, Clause 5.

6 Design and Construction

6.1 General

Shall be according to EN 13611:2019, 6.1 with the following addition:

Controls shall shut off the gas way to the burner automatically with at least the sealing force specified in 7.104 in case of failure in the thermoelectric current. Controls shall also be designed so that during ignition either the gas way to the main burner is open, if there is no pilot burner, or the gas way to the main burner is closed and that to the pilot burner is open.

6.2 Mechanical parts of the control

6.2.1 Appearance

Shall be according to EN 13611:2019, 6.2.1.

6.2.2 Holes

Shall be according to EN 13611:2019, 6.2.2.

6.2.3 Breather holes

EN 13611:2019, 6.2.3 is not applicable.

6.2.4 Screwed fastenings

Shall be according to EN 13611:2019, 6.2.4.

6.2.5 Jointing

Shall be according to EN 13611:2019, 6.2.5.

6.2.6 Moving parts

Shall be according to EN 13611:2019, 6.2.6.

6.2.7 Sealing caps

Shall be according to EN 13611:2019, 6.2.7.

6.2.8 Dismantling and reassembly

Shall be according to EN 13611:2019, 6.2.8.

6.2.9 Auxiliary channels and orifices

Shall be according to EN 13611:2019, 6.2.9.

6.2.10 Presetting device

Shall be according to EN 13611:2019, 6.2.10.

6.3 Materials

6.3.1 General material requirements

Shall be according to EN 13611:2019, 6.3.1.

6.3.2 Housing

Shall be according to EN 13611:2019, 6.3.2.

6.3.3 Zinc alloys

Shall be according to EN 13611:2019, 6.3.3.

6.3.4 Springs

Shall be according to EN 13611:2019, 6.3.4.

6.3.5 Resistance to corrosion and surface protection

Shall be according to EN 13611:2019, 6.3.5.

6.3.6 Impregnation

Shall be according to EN 13611:2019, 6.3.6.

6.3.7 Seals for glands for moving parts

Shall be according to EN 13611:2019, 6.3.7.

6.4 Gas connections

6.4.1 Making connections

Shall be according to EN 13611:2019, 6.4.1.

6.4.2 Connection sizes

Shall be according to EN 13611:2019, 6.4.2.

6.4.3 Threads

Shall be according to EN 13611:2019, 6.4.3.

6.4.4 Union joints

Shall be according to EN 13611:2019, 6.4.4.

6.4.5 Flanges

Shall be according to EN 13611:2019, 6.4.5.

6.4.6 Compression fittings

Shall be according to EN 13611:2019, 6.4.6.

6.4.7 Nipples for pressure test

Shall be according to EN 13611:2019, 6.4.7.

6.4.8 Strainers

Shall be according to EN 13611:2019, 6.4.8 with the following addition:

Strainers fitted to controls of DN 25 and above shall be accessible for cleaning or replacement without the need to remove the control body by dismantling threaded or welded pipe work.

6.5 Electronic parts of the control

EN 13611:2019, 6.5 is not applicable.

6.6 Protection against internal faults for the purpose of functional safety

EN 13611:2019, 6.6 is not applicable.

NOTE See Scope.

7 Performance

7.1 General

Shall be according to EN 13611:2019, 7.1 with the following addition:

Tests shall be conducted in the sequence shown in Table 1.

Table 1 — Sequence of testing

Clauses no.	Type of test
7.3	Test for leak-tightness
7.7	Test for rated flow rate
7.101.2	Test for operating torque and force
7.102.2	Test for interlocks
7.104.2	Test for sealing force
7.103.2	Test for closing current
7.5	Torsion and bending tests
7.105.2.1	Static endurance test
7.105.2.2	Dynamic endurance test
7.8	Durability

7.2 Leak-tightness

7.2.1 Requirements

EN 13611:2019, 7.2 is replaced by the following:

Controls shall be leak-tight in accordance with the leakage rates given in Table 2.

Table 2 — Maximum leakage rates

Gas connection nominal inlet size DN	Maximum leakage rates cm^3/h of air			
	Internal leak tightness		External leak tightness	
	Closed (de-energized) position	Ignition position	Operating and closed (de-energized) position	Ignition position
DN < 10	20	5 000	20	170
10 ≤ DN ≤ 25	40		40	190
25 < DN ≤ 50	60		60	210

Closure parts shall remain leak-tight after dismantling and reassembly.

7.2.2 Test

7.2.2.1 General

Shall be according to EN 13611:2019, 7.2.2.1.

7.2.2.2 External leak-tightness

Shall be according to EN 13611:2019, 7.2.2.2 with the following addition:

Pressurize the inlet and outlet(s) of the control to the test pressures given in 7.2.2.2.

Before the test, closure parts which may be dismantled in accordance with 6.2.9 shall be dismantled and reassembled five times to the manufacturer's instructions and the leakage rate for each of the mentioned conditions below is measured.

a) The control shall be operated such that all closure members in the control are in the open position. Any suitable electrical source may be used during the test. The inlet and outlet(s) of the control shall then be pressurized to the test pressure according to 7.2.2.2.

b) The test of a) shall then be carried out with the electrical source removed so that the main and pilot gas ways (for protected pilots) in the control are closed.

c) The test of a) shall then be repeated with any spindle moved during ignition and held in the ignition position.

7.2.2.3 Internal leak-tightness

EN 13611:2019, 7.2.2.3 is replaced by the following:

Closed position

Test in the closed position the leakage of the de-energized control in the direction of gas flow, at the test pressures given in 7.2.2.1 and measure the leakage rate. If there is more than one closure member in the control, the test shall be repeated with each closure member in turn in the closed position, all the other closure members being fully open.

Ignition position

For controls equipped with a pilot burner outlet, this outlet shall be blocked. Test in the ignition position the leakage of the de-energized control in the direction of gas flow at the test pressures given in 7.2.2.1 and measure the leakage rate.

7.3 Torsion and bending

Shall be according to EN 13611:2019, 7.3.

7.4 Rated flow rate

7.4.1 Requirement

EN 13611:2019, 7.4.1 is replaced by the following:

The flow rate when measured according to 7.7 shall be between 0,95 times and 1,40 times the rated flow rate as declared by the manufacturer.

7.4.2 Test

Shall be according to EN 13611:2019, 7.4.2.

7.4.3 Conversion of air flow rate

Shall be according to EN 13611:2019, 7.4.3.

7.5 Durability

Shall be according to EN 13611:2019, 7.5.

7.6 Performance tests for electronic controls

EN 13611:2019, 7.6 is not applicable.

NOTE See Scope.

7.7 Long-term performance for electronic controls

EN 13611:2019, 7.7 is not applicable.

NOTE See Scope.

7.8 Data exchange

EN 13611:2019, 7.8 is not applicable.

NOTE See Scope.

7.101 Operating torque and force

7.101.1 Requirement

If applicable the torque required to operate the control shall not exceed the values given in Table 3.

Table 3 — Nominal sizes and operating torque

Gas connection nominal inlet size DN	Maximum operating torque N·m	
	Classes A and B	Class C
6	0,2	0,6
8	0,2	0,6
10	0,2	0,6
12	0,2	0,6
15	0,4	0,6
20	0,4	0,6
25	0,4	0,6
32	0,4	1,0
40	0,4	1,0
50	0,4	1,0

If the manufacturer supplies a knob together with the control, the operating torque shall not exceed 0,017 Nm per millimetre of knob diameter.

The force or pressure required to operate a push-button directly by hand shall not exceed 30 N for nominal size of controls up to and including DN 10, and 45 N for nominal size of controls exceeding DN 10, or 0,5 N/mm^2, whichever is smaller.

7.101.2 Test for operating torque and force

The operating torque is measured with a suitable torque meter having an accuracy within ±10 % of the maximum torque specified in Table 3 the relevant size of control to check for compliance with 7.101.1. Carry out the opening and closing movement with a constant angular velocity of approximately 1,5 rad/s.

The operating force is measured with a suitable dynamo meter having an accuracy within ±10 % of the measured value to check for compliance with 7.101.1.