SLOVENSKI STANDARD
oSIST prEN 1854:2008

01-november-2008

Tlaļ na zaznavala za plinske gorilnike in plinske aparate

Pressure sensing devices for gas burners and gas burning appliances

Ta slovenski standard je istoveten z: **prEN 1854**

ICS:

23.060.40	Tlaļ ni regulatorji	Pressure regulators

oSIST prEN 1854:2008 **en,fr,de**

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

DRAFT
prEN 1854

July 2008

ICS 23.060.40

Will supersede EN 1854:2006

English Version

Pressure sensing devices for gas burners and gas burning appliances

Dispositifs de surveillance de pression pour brûleurs à gaz et appareils à gaz

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

If this draft becomes a European Standard, 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.

This draft European Standard was established by CEN 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 Management Centre has the same status as the official versions.

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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

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

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Foreword

This document (prEN 1854:2008) 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 document is currently submitted to the CEN Enquiry.

This document will supersede EN 1854:2006.

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 EC Directive(s).

For relationship with EC Directive(s), see informative Annex ZA, B, C, D, H and J which is an integral part of this document.

For this draft European Standard a transition period of 2 years is proposed.

During the public enquiry stage the this document refers to some IEC standards. These IEC standards are in the process to become European standards. It is the intention of the responsible working group to update the IEC references to the related EN references before the revised standard is launched for formal vote.

It is essential that this document is used in conjunction with EN 13611:2007. This document refers to clauses of EN 13611:2007 or adapting it by stating “Addition”, “Modification” or “Replacement” in the corresponding clause. This European Standard adds clauses or sub clauses to the structure of EN 13611:2007 (e. g. clause 3.35 and 6.4.9). Note that these clauses or not indicated as an addition.

Note that the following provides details of significant technical changes between this European Standard and the previous edition:

a) incorporation of the requirements and tests for electronic pressure sensing devices (EPSDs);

b) alignment with EN 13611:2007;

c) updating of definitions and normative references.

1 Scope

This European Standard specifies the safety, construction and performance requirements for pressure sensing devices.

This European Standard covers type testing only.

It applies to pressure sensing devices for the control of pressures of combustible gases of the first, second and third families, air, combustion products and mixtures thereof for maximum inlet pressures up to 5 bar.

It applies to all types of pressure sensing devices, including electronic, differential and inferential types.

It specifies requirements for pressure sensing devices which are intended to be applied for steam boilers and which needs to meet increased reliability requirements as such. These devices are classified as PSD-S in this document.

2 Normative references

The following referenced documents are indispensable for the application 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 13611:2007, *Safety and control devices for gas burners and gas-burning appliances — General requirements*

EN 60529, *Degrees of protection provided by enclosures (IP code)*

EN 61058-1, *Switches for appliances — Part 1: General requirements*

EN 175301-803, *Detail Specification: Rectangular connectors — Flat contacts, 0,8 mm thickness, locking screw not detachable*

EN ISO 75 (all parts), *Plastics — Determination of temperature of deflection under load*

IEC 60730-1:2007, Automatic electrical controls for household and similar use - Part 1: General requirements

IEC 60730-2-6:2007, Automatic electrical controls for household and similar use — Part 2-6: Particular requirements for automatic electrical pressure sensing controls including mechanical requirements

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

3.1
control
[EN 13611:2007, 3.1]

3.2
control function
[EN 13611:2007, 3.2]

3.3
closure member
[EN 13611:2007, 3.3]

3.4
external leak-tightness
[EN 13611:2007, 3.4]

3.5
internal leak-tightness
[EN 13611:2007, 3.5]

3.6
inlet pressure
[EN 13611:2007, 3.6]

3.7
outlet pressure
[EN 13611:2007, 3.7]

3.8
pressure difference
[EN 13611:2007, 3.8]

3.9
maximum inlet pressure
[EN 13611:2007, 3.9]

3.10
minimum inlet pressure
[EN 13611:2007, 3.10]

3.11
flow rate
[EN 13611:2007, 3.11]

3.12
rated flow rate
[EN 13611:2007, 3.12]

3.13
maximum ambient temperature
[EN 13611:2007, 3.13]

3.14
minimum ambient temperature
[EN 13611:2007, 3.14]

3.15
mounting position
[EN 13611:2007, 3.15]

3.16
nominal size
DN
[EN 13611:2007, 3.16]

3.17
apparatus
[EN 13611:2007, 3.17]

3.18
system
[EN 13611:2007, 3.18]

3.19
installation
[EN 13611:2007, 3.19]

3.20
fault tolerating time
[EN 13611:2007, 3.20]

3.21
fault reaction time
[EN 13611:2007, 3.21]

3.22
normal operation
[EN 13611:2007, 3.22]

3.23
defined state
[EN 13611:2007, 3.23]

3.24
complex electronics
[EN 13611:2007, 3.24]

3.25
reset
[EN 13611:2007, 3.25]

3.26
failure
[EN 13611:2007, 3.26]

3.27
degradation
[EN 13611:2007, 3.27]

3.28
fault
[EN 13611:2007, 3.28]

3.29
harm
[EN 13611:2007, 3.29]

3.30
hazard
[EN 13611:2007, 3.30]

3.31
risk
[EN 13611:2007, 3.31]

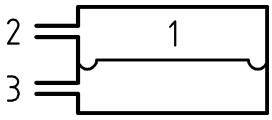
3.32
functional safety
[EN 13611:2007, 3.32]

3.33
program
[EN 13611:2007, 3.33]

3.34
breather hole
[EN 13611:2007, 3.34]

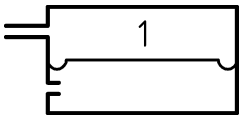
3.35
pressure sensing device
PSD
device which senses pressure and provides a signal

NOTE Different types of PSDs are given in Figures 1 to 3.



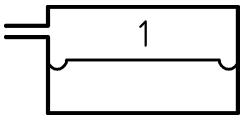
Key
1 sensing element
2 Inlet 1
3 Inlet 2/reference

Figure 1 — Differential (E)PSD



Key
1 sensing element

Figure 2 — Atmospheric (E)PSD



Key
1 sensing element

Figure 3 — Absolute (E)PSD

3.36
set point
pressure to which the PSD is adjusted to operate or to switch

3.37
switching pressure
inlet pressure at which the PSD operates or switches

3.38
set point range
declared range of adjustment of the PSD between the highest and lowest set points

3.39
upper switching pressure
pressure at which the PSD operates or switches during an increase in pressure

3.40
lower switching pressure
pressure at which the PSD operates or switches during a decrease in pressure

3.41
electronic pressure sensing device
EPSD
electronic based pressure sensing element and a signal conditioner.

NOTE Figure 4, clarifies the EPSD

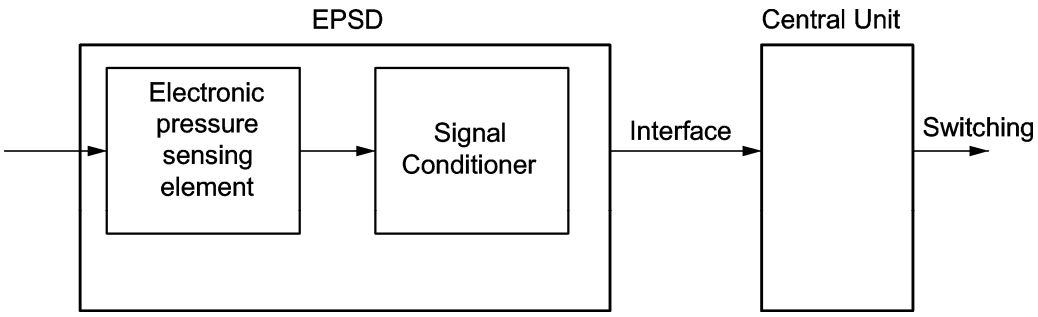


Figure 4 — EPSD

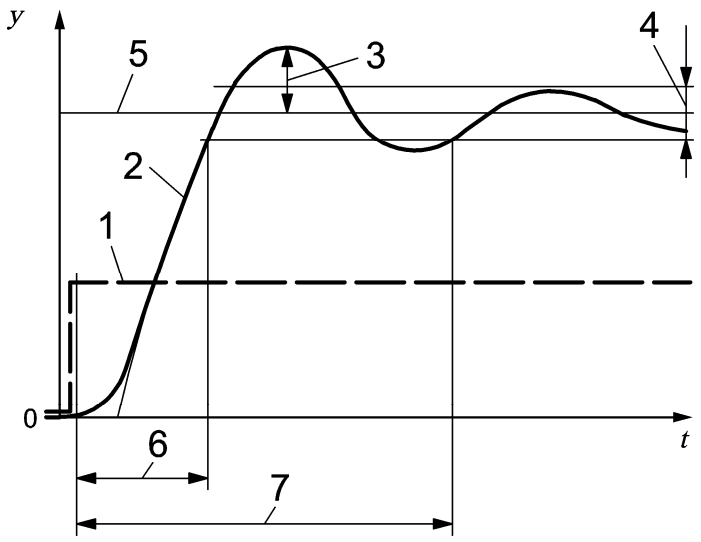
3.42
electronic pressure sensing element
part of the EPSD, which transforms the signal to be sensed (e.g. pressure) to another physical value (e.g. force, voltage, etc.)

3.43
signal conditioner
transforms the signal from the sensing element into the output signal of the EPSD

NOTE The signal conditioner may consist functional electronics as well as electronics which makes the sensor output to be classified as class B or C in accordance with EN 13611:2007

3.44
response time
time counted from start of the step change input signal (e.g. pressure) until the output signal (e.g. voltage, current) is in the settling tolerance for the first time

NOTE For further information refer to figure 5.



Key

1	step function	5	steady state value
2	step response	6	response time
3	overshoot value	7	settling time
4	settling tolerance		

Figure 5 — Step response of a transfer element

3.45
step response
output signal change of a device having a step change input signal

3.46
steady state value
value of the output signal after step response input remains constant.

3.47
settling tolerance
difference between the current output signal and its steady state value declared by the manufacturer.

3.48
settling time
time counted from start of the step change input signal until the output signal remains in the settling tolerance.

3.49
overshoot value
biggest deviation between the output signal and its steady state value after step change of the inlet signal exceeding the settling tolerance for the first time.

3.50
withstand pressure
pressure that is withstood without degraded performance after returning below the maximum inlet pressure

3.51
deviation
difference between the declared or indicated set point and the pressure measured before the endurance test

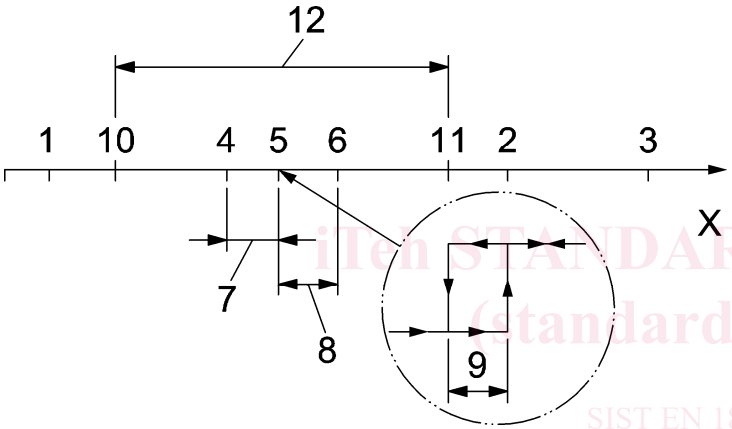
3.52
drift
difference between the switching pressures, or in case of EPSD the positive or negative shift of the sensor characteristic measured before and after the endurance test

NOTE For illustration refer to figure J.1.

3.53
repeatability
ability of a system to provide similar output for repeated operation

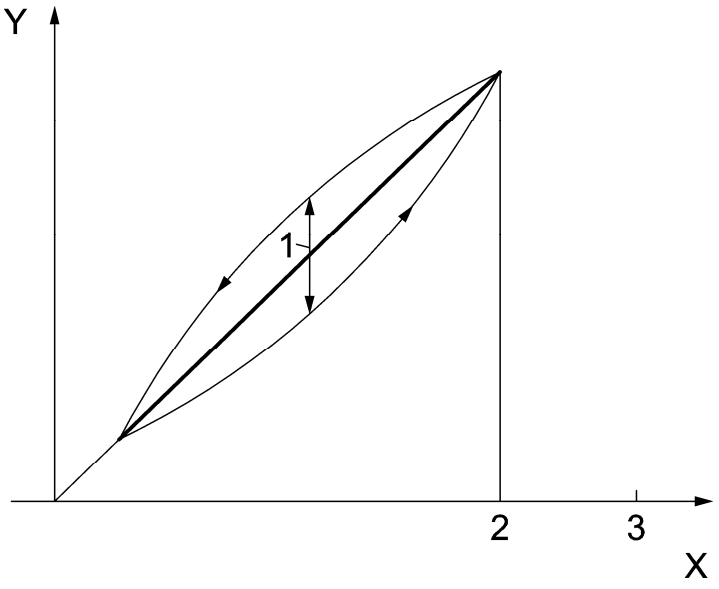
3.54
hysteresis
greatest differences between the upscale and downscale output readings or upper and lower switching pressure at one point

NOTE Clarification of the hysteresis in reference to other definitions of PSDs is given in figure 6 and 7.



Key
1 minimum inlet pressure
2 maximum inlet pressure
3 withstand pressure
4 set point
5 switching point (before endurance)
6 switching point (after endurance)
7 deviation
8 drift
9 hysteresis
10 lowest set point
11 highest set point
12 set point range
x P-Inlet/P-Differential

Figure 6 — Clarification of definitions for PSD-M and PSD-S



Key
1 hysteresis
2 maximum inlet pressure
3 withstand pressure
x P-Inlet/P-Differential
y output

Figure 7 — Clarification of definitions for EPSD

3.55
transfer ratio
positive or negative rotation of the sensor characteristic with the intersection of the characteristic and the x-axis as point of rotation

NOTE For illustration refer to figure J.1.

3.56
linearity
linearity is the worst case deviation of straightness of the actual transfer function from the ideal straight line

NOTE For illustration refer to figure J.1.

3.57
offset
positive or negative deviation of the intersection of the sensor characteristic and the y-axis

NOTE For illustration refer to figure J.1

3.58
resolution
minimum incremental input or output change area

4 Classification

4.1 Classes of control

According to EN 13611:2007, 4.1.

Replacement:

Pressure sensing devices (PSDs) can be classified as:

— PSD-M, being a mechanical pressure sensing device;

— PSD-S, being a PSD-M meeting increased requirements;

— EPSD, being an electronic pressure sensing device, including devices with variable output.

4.2 Groups of control

According to EN 13611:2007, 4.2.

Modification:

Group 2 is not applicable for PSDs.

4.3 Classes of control functions

According to EN 13611:2007, 4.3.