SLOVENSKI STANDARD
SIST EN 1854:2010

01-november-2010

Nadomešča:
SIST EN 1854:2006

Tlačna zaznavala za plinske gorilnike in plinske aparate

Pressure sensing devices for gas burners and gas burning appliances

Druckwächter für Gasbrenner und Gasgeräte

iTeh STANDARD PREVIEW

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

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Ta slovenski standard je istoveten z: **EN 1854:2010**

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ICS:

23.060.40	Tlačni regulatorji	Pressure regulators
27.060.20	Plinski gorilniki	Gas fuel burners

SIST EN 1854:2010 **en,fr,de**

2003-01.Slovenski inštitut za standardizacijo. Razmnoževanje celote ali delov tega standarda ni dovoljeno.

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EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 1854

May 2010

ICS 23.060.40

Supersedes 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

Druckwächter für Gasbrenner und Gasgeräte

This European Standard was approved by CEN on 15 April 2010.

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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 Management Centre has the same status as the official versions.

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SIST EN 1854:2010

Foreword

This document (EN 1854:2010) 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of an identical text or by endorsement, at the latest by November 2010, and conflicting national standards shall be withdrawn at the latest by May 2012.

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 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 EU Directive(s).

For relationship with EU Directive(s), see informative Annex ZA, which is an integral part of this document.

This European Standard refers to clauses of EN 13611:2007 or adapts it by stating "with the following modification", "with the following addition", "is replaced by the following" or "is not applicable" in the corresponding clause. This European Standard adds clauses or subclauses to the structure of EN 13611:2007 which are particular to this European Standard. It should be noted that these clauses and subclauses are not indicated as an addition.

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

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a) the scope introduces a new declaration concerning the maximum inlet pressure covered by the revised standard;

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

c) alignment with EN 13611:2007;

d) updating of definitions and normative references.

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 and the United Kingdom.

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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 measurement of pressures of combustible gases of the first, second and third families, air, combustion products for maximum inlet pressures up to 500 kPa (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 to steam boilers and as such need to meet increased reliability requirements. These devices are classified as PSD-S in this European Standard.

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*

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EN 60529:1991, *Degrees of protection provided by enclosures (IP code) (IEC 60529:1989)*

EN 60730-2-6:2008, *Automatic electrical controls for household and similar use — Part 2-6: Particular requirements for automatic electrical pressure sensing controls including mechanical requirements (IEC 60730-2-6:2007, modified)*

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EN 61058-1:2002, *Switches for appliances — Part 1: General requirements (IEC 61058-1:2000 + A1:2001, modified)*

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*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 13611:2007 and the following apply.

3.101
pressure sensing device
PSD
device which senses pressure and provides a signal

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

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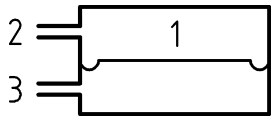
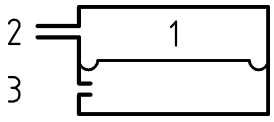


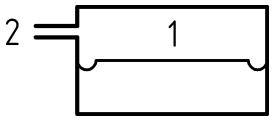
Key
1 sensing element
2 inlet 1
3 inlet 2/reference

Figure 1 — Differential PSD



Key
1 sensing element
2 inlet 1
3 reference

Figure 2 — Atmospheric PSD



Key
1 sensing element
2 inlet 1

Figure 3 — Absolute PSD

3.102
set point
pressure to which the PSD is adjusted to operate

3.103
switching pressure
inlet pressure at which the PSD operates

3.104
set point range
declared range of adjustment of the PSD between the highest and lowest set points

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3.105
upper switching pressure
pressure at which the PSD operates during an increase in pressure

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3.106
lower switching pressure
pressure at which the PSD operates during a decrease in pressure

3.107
electronic pressure sensing device
EPSD
assembly of electronic based pressure sensing element and signal conditioner

NOTE Figure 4, clarifies the EPSD.

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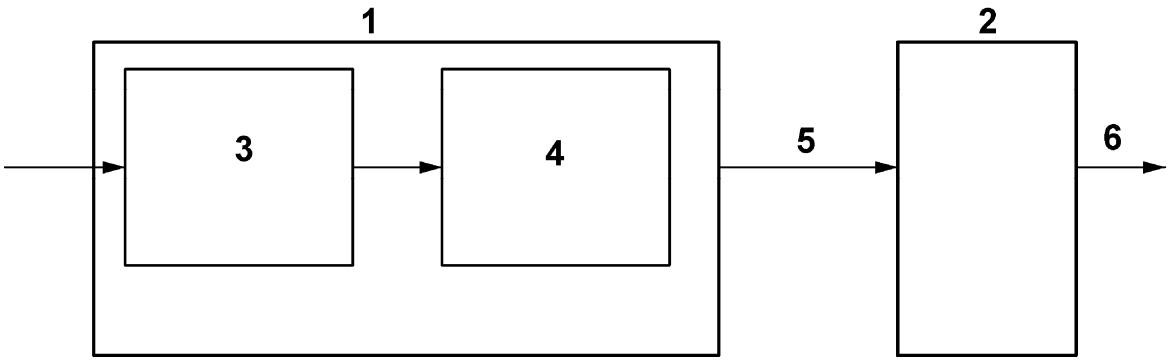

Key

1 EPSD

2 Central Unit

3 Electronic pressure sensing element

4 Signal Conditioner

5 Interface

6 Switching

Figure 4 — EPSD

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3.108
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)

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3.109
signal conditioner
transforms the signal from the sensing element into the output signal of the EPSD

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

3.110
response time
time counted from start of the step change input signal (e.g. pressure) until the output signal (e.g. voltage, current) is within the settling tolerance for the first time

NOTE For further information refer to Figure 5.

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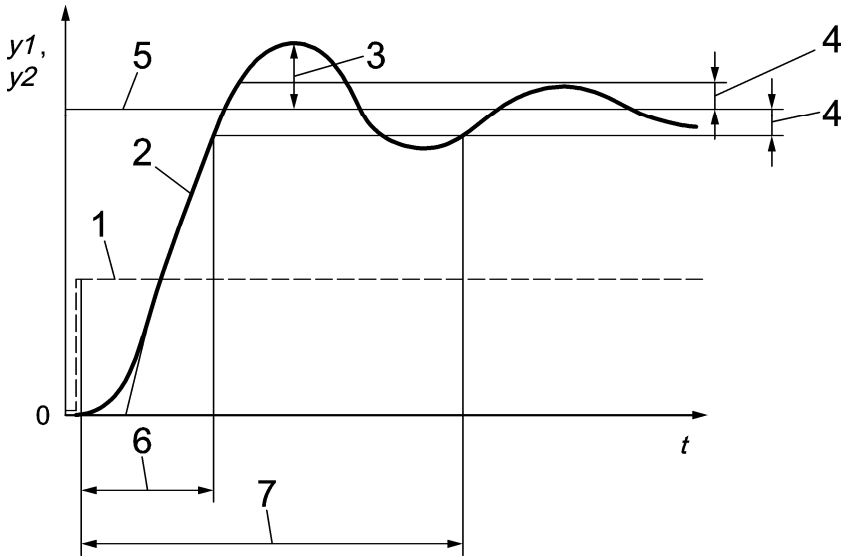

Key

1	step function (*y1*)	5	steady state value
2	step response (*y2*)	6	response time
3	overshoot value	7	settling time
4	settling tolerance	*t*	time

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Figure 5 — Step response of EPSD

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3.111
step response
output signal change of a device having a step change input signal

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3.112
steady state value
value of the output signal after step response input remains constant

3.113
settling tolerance
difference between the current output signal and its steady state value declared by the manufacturer

3.114
settling time
time counted from start of the step change input signal until the output signal remains within the settling tolerance

3.115
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

3.116
withstand pressure
pressure that is withstood without degraded characteristic after returning below the maximum inlet pressure

NOTE The withstand pressure can be equal to maximum inlet pressure.

3.117
deviation
difference between the declared or indicated set point and the pressure measured before the endurance test

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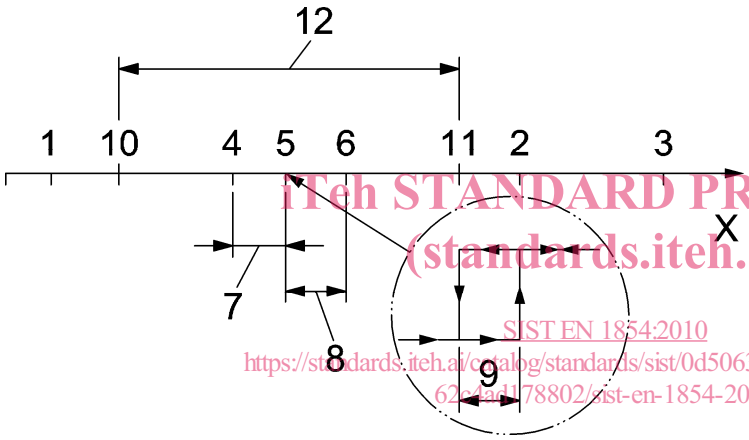
3.118
drift
difference between the switching pressures, or in case of EPSD the positive or negative shift of the sensor characteristic, measured before and after the endurance test

NOTE For illustration refer to Figure 7.

3.119
repeatability
ability of a system to provide similar output for repeated operation

3.120
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 pressure (before endurance)
6 switching pressure (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

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

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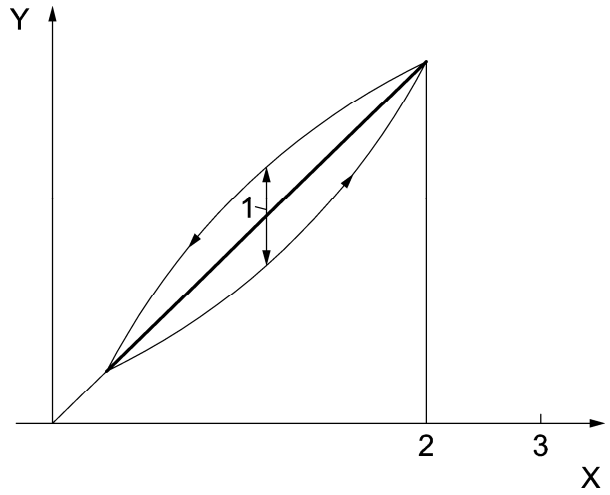
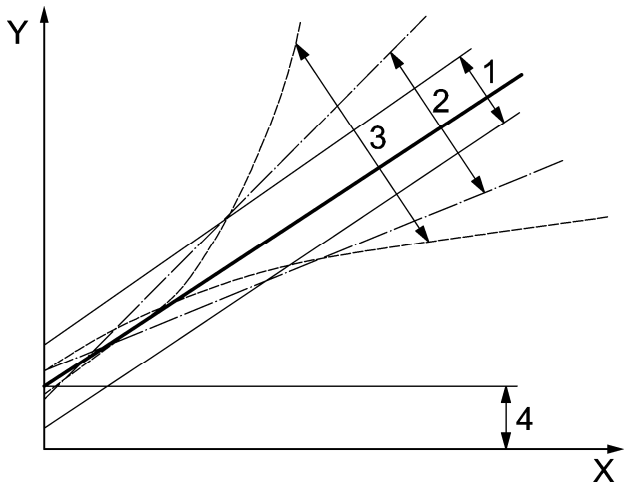


a) Clarifications of hysteresis, maximum inlet and withstand pressure

Key
1 hysteresis
2 maximum inlet pressure
3 withstand pressure
X P-inlet/P-differential
Y output signal



b) Clarifications of drift, transfer ratio, linearity and offset

Key
1 drift
2 transfer ratio
3 linearity
4 offset
X pressure
Y output signal

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Figure 7 — Clarification of definitions for EPSD

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3.121
transfer ratio
positive or negative rotation of the sensor characteristic with the point of rotation as the intersection of the characteristic and the x-axis

NOTE For illustration refer to Figure 7.

3.122
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 7.

3.123
offset
positive or negative deviation of the intersection of the sensor characteristic and the y-axis

NOTE For illustration refer Figure 7.

3.124
resolution
minimum incremental output change

4 Classification

4.1 Classes of control

EN 13611:2007, 4.1 is replaced by the following:

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Pressure sensing devices (PSDs) are 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

Shall be according to EN 13611:2007, 4.2 with the following modification:

Group 2 is not applicable for PSDs.

4.3 Classes of control functions

Shall be according to EN 13611:2007, 4.3.

5 Units of measurement and test conditions

Shall be according to EN 13611:2007, Clause 5.

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6 Construction requirements

6.1 General

Shall be according to EN 13611:2007, 6.1 with the following addition:

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Clause 6 is applicable for PSD-M, PSD-S and EPSDs unless stated otherwise.

The minimum inlet pressure, the maximum inlet pressure and the withstand pressure shall be declared by the manufacturer. If no withstand pressure is declared, the withstand pressure is equal to the maximum inlet pressure. At the withstand pressure, devices shall comply with the requirements of this European Standard with the exception of 7.101.

The declared pressures can be positive or negative pressures.

6.2 Mechanical parts of the control

6.2.1 Appearance

Shall be according to EN 13611:2007, 6.2.1.

6.2.2 Holes

Shall be according to EN 13611:2007, 6.2.2 with the following modification:

This requirement only applies to PSDs designed for combustible gas.

6.2.3 Breather holes

Shall be according to EN 13611:2007, 6.2.3 with the following modification and addition: