



KDBEX.eu

# [1] EU-TYPE EXAMINATION CERTIFICATE

[2] Equipment and protective systems intended for use in potentially explosive atmospheres. Directive 2014/34/EU

[3] EU – type examination certificate (module B):

**KDB 09ATEX053X**

**issue 1**

[4] Equipment:

**Resistance thermometers type TOP-\*/Exe  
Thermocouples type TER-\*/Exe**

[5] Manufacturer:

**ALF SENSOR Sp. J.**

[6] Address:

**ul. Narcyzowa 3, 31-342 Kraków, Poland**

[7] This equipment and any acceptable variation thereto is specified in the schedule to this certificate.

[8] Główny Instytut Górnictwa, Notified Body number 1453 in accordance with Directive 2014/34/EU of 26 February 2014, certifies that this equipment and protective system has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of equipment and protective systems intended for use in potentially explosive atmospheres given in Annex II to the Directive 2014/34/EU. The examination and test results are recorded in confidential report **KDB Nr 09.075-3 [T-6450]**

[9] Compliance with the Essential Health and Safety Requirements has been met by compliance with:

**EN 60079-0:2012 + A11:2013; EN 60079-7:2015;  
EN 60079-26:2015; EN 60079-31:2014;**

[10] In case if the sign „X“ is placed after the certificate number, it indicates special conditions for safe use, specified in the schedule to this certificate.

[11] This EU-type examination certificate relates only to the construction, evaluation and tests of product accordance with Directive 2014/34/EU. The certificate does not include other requirements of the Directive relating to manufacturing process and putting into the market of the equipment or protective device.

[12] Marking of the equipment shall include:



**II 2G Ex eb IIC T\* Gb**

**II 1/2D Ex ta IIIC T\*°C Da/Db**

\* - The maximum surface temperature and / or the temperature class of the sensor is determined at the place of installation

Specjalista ds. Certyfikacji  
Urządzeń Przeciwwybuchowych

dr inż. Michał Górny



KIEROWNIK  
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Główny Instytut Górnictwa, 40-166 Katowice, Plac Gwarków 1, POLSKA (Jednostka certyfikująca akredytowana przez PCA, Nr AC038)  
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Issue 0 is mean the initial certification. The document without signatures and seals is invalid.

PC/CM-ATAX-01/ExNpl ed. 01.2016

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**SCHEDULE**  
EU-type Examination Certificate  
**KDB 09ATEX053X issue 1**



**[15] Description:**

Resistance thermometers type TOP-\*/Exe and thermocouple type TER-\*/Exe are used to measure the temperature of vapours, liquids and gases. The measuring elements of the resistance thermometers are thermometric resistors, thermistors and thermocouples. The measuring elements of thermocouple are thermocouple junctions.

Thermometers are made with a head or a cable connected permanently. The measuring element is placed in the cover in performance with the head and is connected to the connection block or to the temperature transducer.

Series of type is encoded according to the scheme TOP-\*/Exe, TER-\*/Exe, where "\*" is a shortcut of full marking of type, listed below:

- Resistance thermometers:

**TOP - A - B - C - D - E - F - G - H - I - K - L /Exe**

**A:** Symbol of the process connection acc. to the data sheet

PD - 03, PKG - 04, PKG - 05, PF - 06, W -12, PF/DN - 55, PD - 71, PKG-79, PD - 86, PKG - 158.

**B:** Type of measurement element: WP - OP - 01, WP - OP - 01-SG, WP-OP-01 ds1

**C:** System of internal wires connection

Single: 1xPt100, 1xPt500, 1xPt1000;  
Dual: 2xPt100, 2xPt500, 2xPt1000

**D:** Sensor class of accuracy

A, B, 1/3 B DIN, 1/5 B DIN

**E:** System of internal wires connection

2 - wires - 2p  
3 - wires - 3p  
4 - wires - 4p

**F:** Sheath diameter d [mm] (measuring insert the diameter of the sheath d [mm])

1.5, 3, 4.5, 6, 8, d > 8

**G:** Thermowell length L

Thermowell length L w [mm] specify in order.





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**H:** Additional Thermowell material:

Carbon steel, stainless steel, heat-resistant steel, boiler steel, alloy steel, special alloys, tantalum, ceramic.

**I:** Type of process connection

- For nipple - M10, M12, M12x1, M14x1.5, M16x1.5, M18x1.5, M20x1.5, M24x1.5, M27x2, M33x3, G1/4, G1/2, G3/4, G1, 1/4NPT, 1/2NPT, 3/4NPT and other
- For flange - acc. to order specify flange parameters

**K:** Type of connection head acc. to data sheet, degree of protection IP 67

XE-BE, XE - DANA, XE - DANAW, XE - DAND, XE - DANDW, XE - DANAFW, XD-AD, Junction boxes.

**L:** Type of transmitter

Without transmitter with connection block	- 0
Transmitter-approved according to ATEX	- 1

- Thermocouples:

**TER - A - B - C - D - E - F - G - H - I - K - L /Exe**

**A:** Symbol of the process connection acc. to the data sheet

PD - 07, PKG - 08, PF - 09, P - 10, W - 11, PD - 54, PD - 54-skin, PKG/PF - 64, PKG - 78, PKG - 78-skin, PKG-79, PKG - 157,

**B:** Type of measurement element: WP - TE - 02, WP - TE - 02 - SG, WP-TE-02-ds1

**C:** Type of thermocouple

1xT; 1xJ; 1xE; 1xK, 1xN, 1xS, 1xR; 1xB, 1xC; 2xT; 2xJ; 2xE; 2xK, 2xN, 2xS, 2xR; 2xB, 2xC i inne

**D:** Sensor class of accuracy: 1, 2

**E:** Sheath diameter d [mm] (measuring insert the diameter of the sheath d [mm])

1.5, 3, 4.5, 6, 8, d > 8



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**F:** Thermowell length L

Thermowell length L w [mm] specify in order.

**G:** Additional Thermowell material:

Carbon steel, stainless steel, heat-resistant steel, boiler steel, alloy steel, special alloys, tantalum, ceramic.

**H:** Type of process connection

- For nipple - M10, M12, M12x1, M14x1.5, M16x1.5, M18x1.5, M20x1.5, M24x1.5, M27x2, M33x3, G1/4, G1/2, G3/4, G1, 1/4NPT, 1/2NPT, 3/4NPT and other
- For flange - acc. to order specify flange parameters

**I:** Type of connection head acc. to data sheet, degree of protection IP 67

XE-BE, XE - DANA, XE - DANAW, XE - DAND, XE - DANDW, XE - DANAFW, XD-AD, Junction boxes

**K:** Type of hot junction

Insulated - 0  
Grounded - Z

**L:** Type of transmitter

Without transmitter with connection block	- 0
Transmitter-approved according to ATEX	- 1

- Thermometers with cable:

**TOP - A - B - C - D - E - F - G - H - I - K /Exe**

**A:** Symbol of the process connection acc. to the data sheet

PZKbm - 23, PKbm - 32, KKbm-172

**B:** Type of resistor

Single: 1xPt100, 1xPt500, 1xPt1000; NTC10K  
Dual: 2xPt100, 2xPt500, 2xPt1000,



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<b>C:</b> Sensor class of accuracy
A, B, 1/3 B DIN, 1/5 B DIN
<b>D:</b> System of internal wires connection
2 - wires                      - 2p 3 - wires                      - 3p 4 - wires                      - 4p
<b>E:</b> Thermowell diameter d [mm]
1.5, 3, 4, 5, 6, 8, 9, 10, d > 10
<b>F:</b> Thermowell length L
Thermowell length L w [mm] specify in order.
<b>G:</b> Thermowell material
Carbon steel, stainless steel, heat-resistant steel, boiler steel, alloy steel, special alloys, tantalum, ceramic.
<b>H:</b> Type of process connection
For nipple - M10, M12, M12x1, M14x1.5, M16x1.5, M18x1.5, M20x1.5, M24x1.5, M27x2, M33x3, G1/4, G1/2, G3/4, G1, 1/4NPT, 1/2NPT, 3/4NPT, for sensor KKbm-172 RUBBLOCK RB100DN or RB200DN, and other
<b>I:</b> Type of connection cable acc. to data sheet
Cross-section of wires of not less than 0.1 [mm <sup>2</sup> ] in isolation adapted to working conditions.
<b>K:</b> Cable length lp
Cable length - lp in [m]





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**Technical parameters:**

Ambient temperature of the head: -40°C ÷ +80°C  
Degree of protection: IP 67

TOP-\*/Exe i TER-\*/Exe thermometers:

$U_i \leq 45[V]$        $I_i \leq 110[mA]$        $P_i \leq 750[mW]$

For measuring inserts:       $C_i \sim 0[nF/m]$        $L_i \sim 0[\mu H/m]$   
For cable sensors:       $C_i = 0,1[nF/m]$        $L_i = 1[\mu H/m]$

Thermal resistance of measuring insert:

- Resistors
  - Measuring inserts diameter Ø1,5mm; Ø3mm; Ø4,5mm: 130 K/W
  - Measuring inserts diameter Ø6mm; Ø8mm: 75 K/W
- Thermocouple
  - Measuring inserts diameter Ø1,5mm: 15 K/W
  - Measuring inserts diameter Ø3mm; Ø4,5mm: 5 K/W
  - Measuring inserts diameter Ø6mm; Ø8mm: 2 K/W

**[16] Test report:**

„Sprawozdanie z oceny ATEX” KDB Nr 09.075-3

**[17] Special conditions for safe use:**

- The maximum surface temperature and / or the class temperature of the sensor should be determined in the place of installation according to the manual.
- Shell inserts in zone “0” with the partition wall thickness of 0.2mm to 1mm, made of stainless steel, should not work in an aggressive environment, which may adversely affect to the separation wall - details are in the manual

**[18] Essential health and safety requirements:**

Met by compliance with standards listed below:

EN 60079-0:2012 + A11:2013 (PN-EN 60079-0:2013-03 + A11:2014-03);  
EN 60079-7:2015 (PN-EN 60079-7:2016-0);  
EN 60079-26:2015 (PN-EN 60079-26:2015-04);  
EN 60079-31:2014 (PN-EN 60079-31:2014-10);

**Document's history:**

- EC-Type Examination Certificate KDB 09ATEX053X of 11.05.2009 r. with all supplements, initial certification (issue 0).
- EC-Type Examination Certificate KDB 09ATEX053X issue 1, **this document**, the range of types was extended, special conditions for safe use and parameters of equipment were changed.

