

EU TYPE EXAMINATION CERTIFICATE



KDBEX

- [1] **EU TYPE EXAMINATION CERTIFICATE**
- [2] Protective equipment and systems intended for use in potentially explosive atmospheres. Directive 2014/34/EU (Rozporządzenie Ministra Rozwoju z dnia 06.06.2016r. Dz.U. z dnia 09.06.2016r. Poz. 817)
- [3] EU type examination certificate (module B):
KDB 07ATEX0055X **1st edition**
- [4] Equipment:
Temperature sensors: head sensors, cable sensors, ambient temperature sensors and high-temperature sensors.
- [5] Manufacturer:
Limatherm Sensor Sp. z o.o.
- [6] Address:
ul. Skrudlak 1, 34-600 Limanowa, Poland
- [7] The protective equipment or system and any acceptable variations thereto are specified in the schedule to this certificate.
- [8] Central Mining Institute, Notified Body no 1453 according to Directive 2014/34/EU of February 26, 2014, approves that the protective equipment specified in this certificate has been found to comply with the essential health and safety requirements for the design and construction of protective equipment and systems intended for use in potentially explosive atmosphere given in Annex II to Directive 2014/34 /EU (Załącznik nr 2 Rozporządzenia Ministra Rozwoju z dnia 06.06.2016r. Dz.U. z dnia 09.06.2016r. Poz. 817). The results of the assessment and examinations as well as the list of agreed documentation are recorded in the confidential Report **KDB No 09.179-4 [T-5940]**
- [9] The essential health and safety requirements have been met by compliance with the requirements of the following standards:
EN IEC 60079-0:2018; EN 60079-11:2012 EN 50303:2000
- [10] If sign "X" is placed after the certificate number, this means the specific conditions of use set out in the schedule to this certificate.
- [11] This EU type examination certificate relates only to the construction, assessment and testing of the specified product in accordance with Directive 2014/34 /EU (Rozporządzenie Ministra Rozwoju z dnia 06.06.2016r. Dz.U. z dnia 09.06.2016r. Poz. 817). The certificate shall not cover the remaining requirements of the Directive regarding the manufacturing process and placing the protective equipment on the market.
- [12] The marking of the equipment shall include the following:

	I M1 Ex ia I Ma	or
	II 1/2G Ex ia IIC T6-T1Ga/Gb	or
	II 2G Ex ia IIC T6-T1 Gb	or
	II 1D Ex ia IIIC T85°C Da	or
	II 2G Ex ia IIB T6-T1 Gb	or
	II 2G Ex ia IIC T4-T1 Gb	or
	II 2G Ex ia IIC T3-T1 Gb	

Główny Instytut Górnictwa
Jednostka Oceny Zgodności
KIEROWNIK ZESPOŁU
ds. Bezpieczeństwa Przeciwwybuchowego
inż. Andrzej Trębaczewski
ATEX Certification
Expert



Główny Instytut Górnictwa
KIEROWNIK
Jednostki Oceny Zgodności
dr inż. Dariusz Stefaniak

Date of issue: **22.08.2022**

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Central Mining Institute, 40-166 Katowice, Plac Gwarków 1, Poland, www.gig.eu
Conformity Assessment Body, 43-190 Mikołów, ul. Podleska 72, www.gigcert.com
Certification Body accredited by PCA [Polish Centre for Accreditation], No AC038.

This certificate may only be reproduced in its entirety together with schedules. The document without signatures and stamps shall be not valid.

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[15] Description:

Temperature sensors: head sensors, cable sensors, ambient temperature sensors and high-temperature sensors depending on the measuring element mounted, can measure temperatures of : fluids, vapours and gases, in the temperature ranges from -200°C up to +1600°C. The measuring elements of those sensors are thermometric resistors or thermocouples.

In the case of sensors equipped with two measuring elements, it is determined to connect them by applying galvanization technology.

The Manufacturer of the temperature sensors offers the following product sensor versions:

1. Ambient temperature sensors for applications in the Explosion Group II. Their consist of a dust-tight casing characterized by IP65 Ingress Protection Rating and a steel enclosure with a thermometric resistor.
2. Cable sensors is constructed for operation exclusively in the Explosion Group II. Their construction is based on the thermometric resistor or thermocouple; they have no head. Their cable is fixed permanently and placed in a protective stainless tube.
3. Head sensors consisting of a dust-tight casing (process enclosure and head made of steel, designed as Explosion Group I, or process enclosure made of steel and head of aluminum or of steel, designed as Explosion Group II); inside the casing there is a thermometric resistor or a thermocouple;
4. High-temperature sensors designed for applications exclusively in the Explosion Group II; they consist of a dust-tight casing (steel process enclosure, corundum ceramics, head made of Al) .

The casings of sensors as described in [15] 1. , [15] 3., and [15] 4. make it possible mounting an intrinsically safe transducer type R/I or U/I (4-20 mA; 0-20 mA; 0-IOV; 0-5V) that meet the requirements for devices classified as Group II 2 G Ex]ia II*T* { * the explosion group and temperature class of a transducer is to be selected based on the real explosion risk in a given environment).

Technical parameters:

Casing's Ingress Protection	Ambient temperature sensors: IP65 Cable sensors: IP65/00 Head sensors: IP66 High-temperature sensors: IP66
Ambient Temperature Range	-40°C ≤ Ta ≤ 75°C
Relative Humidity	Head sensors: up to 80% Ambient temperature sensors: up to 95% Cable sensors with silicon insulation: up to 95% Cable sensors with fibre insulation and metallic braid: up to 45%
Thermocouples: clamping terminals (block, wire)	U _o =3V, U _i =10V I _i =50mA C _i =0,25nF per 1 m length of sensor or wire L _i =0,3mH per 1 m length of sensor or wire
Thermometer resistors: clamping terminals (block, wire)	P _i =100mW, U _i =10V, C _i =0,25nF/m, L _i =0,3mH/m With thermometer resistor: - PT-100: I _i =10 mA, - PT-500 and PT-1000: I _i =3 mA



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b) ambient temperature sensors :

	TOPZ- 842	-	E X i	-		-		-		-		-		-		-	
Sensor without transducer:	no code mark																
Sensor with transducer :	AP																
Immersion length L (standard 50) [mm] :	e.g. 80																
Diameter of enclosure [mm]	e.g. 6																
Resistor type:	Pt100 or Pt500 or Pt1000																
Class of Accuracy	A or B																
Number of connecting wires :	2 or 3 or 4																
Output signal / temperature range for transducer °C	e.g. 4-20mA/(-40-+100)																
Transducer type(only if important for the Purchaser),																	

c) cable temperature sensors:

			E	-	E X i	-		-		-		-		-		-		-		-		-		-	
Single sensor:	no code mark																								
double sensor :	2																								
Measuring elem. Pt:	TOP																								
	Fe-CuNi TTJ																								
	Ni Cr-NiAl TTK																								
	NiCrSi-NiSi * TTN																								
	Cu-CuNi TTT																								
Enclosure for surface with band	244																								
Smooth enclosure, no thread:	361																								
Smooth enclosure, no thread, with bush	361T																								
With treaded connector, welded pipe:	363																								
With treaded connector, rotary pipe:	365																								
Immersion length [mm] acc. to specifications of individual version	e.g. 50																								
Diameter of enclosure[mm] acc. to specifications of individual version	e.g. 6																								
Wire insulation:	Si (silicon), Ws (glass fibre-stainles braid)																								
Resistor type for TOP sensors:	Pt100 or Pt500 or Pt1000																								
Class of Accuracy :	of resistor A or B and of thermocouple - 1 or 2																								
Number of connecting wires :	2 or 3 or 4																								
Termo-junction separated from enclosure:	SO(single sensors); SOA(double sensors)																								
Termo-junction connected with enclosure :	SP																								
Thread dimension :	male e.g. G1/2; M20x1,5 ; or female e.g. WG1/2; WM20x1,5																								
Cable length :	e.g. 2 m																								
Additional accessories :	e.g. sliding holder UG-3, or plug SMP, etc.																								

* Exclusively for coated version



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Coding method and type for temperature sensors:

- **head sensors:**

Ex I M1 Ex ia I Ma

.		T O P	.	Exi	-	N 1	-	P t 1 0 0	-	-	.	.
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single : blank

**I-3; I-6, I-8, GB-1; GN-1; T-1, SW-1,
SW-2, P-1, SWT-1, SWG-1, GWN-5**

-40°C ≤ Ta ≤ 60°C, Pi=150mW, Ui=45V, Ii=26mA;

-40°C ≤ Ta ≤ 75°C, Pi=100mW, Ui=10V, Ii=10mA;

blank

SP

.	2	T O P	.	Exi	-	N 1	-	P t 1 0 0	-	-	.	.
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double (with inserts Φ6)

**I-6, I-8, GB-1; GN-1; T-1, SW-2,
P-1, SWT-1, SWG-1, GWN-5**

-40°C ≤ Ta ≤ 60°C, Pi=150mW, Ui=45V, Ii=26mA;

-40°C ≤ Ta ≤ 75°C, Pi=100mW, Ui=10V, Ii=10mA;

blank

SP

.	2	T O P	.	Exi	-	N 1	-	P t 1 0 0	-	-	.	SP
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double (with inserts Φ3)

I-3, SW-1, GWN-5

-40°C ≤ Ta ≤ 75°C, Pi=100mW, Ui=10V, Ii=10mA;

Ex II 1/2G Ex ia IIC T6-T1 Ga/Gb*
II 1D Ex ia IIIC T85°C Da

.		T O P	.	Exi	-	P t 1 0 0	-	-	.	.
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single: blank

**GB-1; GN-1; T-1, SW-1,
SW-2, P-1, SWT-1, SWG-1, GWN-5**

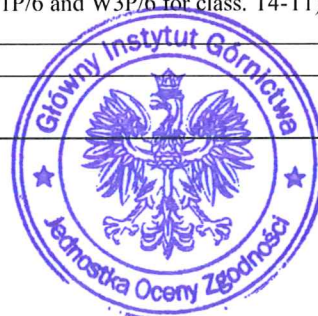
* -40°C ≤ Ta ≤ 75°C, Pi=450mW, Ui=45V, Ii=60mA; (applies to sensors with inserts W1P/6 and W3P/6 for class. T4-T1);

-40°C ≤ Ta ≤ 60°C, Pi=150mW, Ui=45V, Ii=26mA; (applies sensors with inserts Φ3);

-40°C ≤ Ta ≤ 75°C, Pi=100mW, Ui=10V, Ii=10mA; (applies sensors with inserts Φ3);

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SP



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.	2	T O P	.	Exi	-	.	-	.	-	.	-	.	-	.	-	.	-	P t 1 0 0	-	.	-	.	-	.	-	.	-	.	-
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double (with inserts Φ6):
**GB-1; GN-1; T-1, SW-2,
P-1, SWT-1, SWG-1, GWN-5**

* -40°C ≤ Ta ≤ 75°C, Pi=450mW, Ui=45V, Ii=60mA: (applies to sensors with inserts W1P/6 and W3P/6 for class. T4-T1);
-40°C ≤ Ta ≤ 60°C, Pi=150mW, Ui=45V, Ii=26mA;
-40°C ≤ Ta ≤ 75°C, Pi=100mW, Ui=10V, Ii=10mA;

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SP

.	2	T O P	.	Exi	-	.	-	.	-	.	-	.	-	.	-	.	-	P t 1 0 0	-	.	-	.	-	.	-	.	-	.	-	SP
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double (with inserts Φ3):
SW-1, GWN-5

-40°C ≤ Ta ≤ 75°C, Pi=100mW, Ui=10V, Ii=10mA;

* Limited temperature class for higher electrical parameters.



II 2G Ex ia IIC T6-T1 Gb *
II 1D Ex ia IIIC T85°C Da

.		T O P	.	Exi	-	.	-	.	-	.	-	.	-	.	-	.	-	P t 1 0 0	-	.	-	.	-	.	-	.	-	.	-
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single : blank
I-3, I-6, I-8

* -40°C ≤ Ta ≤ 75°C, Pi=450mW, Ui=45V, Ii=60mA: (applies to sensors with inserts W1P/6 and W3P/6 for class. T4-T1);
-40°C ≤ Ta ≤ 60°C, Pi=150mW, Ui=45V, Ii=26mA; (applies sensors with inserts Φ3);
-40°C ≤ Ta ≤ 75°C, Pi=100mW, Ui=10V, Ii=10mA; (applies sensors with inserts Φ3);

blank
SP

.	2	T O P	.	Exi	-	.	-	.	-	.	-	.	-	.	-	.	-	P t 1 0 0	-	.	-	.	-	.	-	.	-	.	-
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double (with inserts Φ6)
I-6, I-8

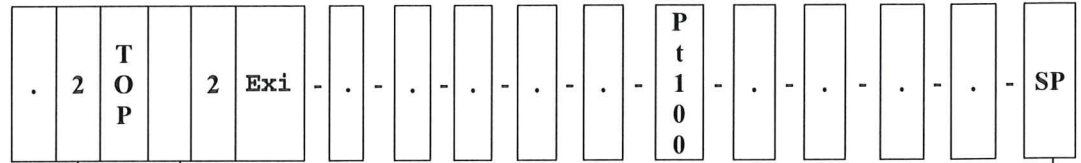
* -40°C ≤ Ta ≤ 75°C, Pi=450mW, Ui=45V, Ii=60mA: (applies to sensors with inserts W1P/6 and W3P/6 for class. T4-T1).
-40°C ≤ Ta ≤ 60°C, Pi=150mW, Ui=45V, Ii=26mA;
-40°C ≤ Ta ≤ 75°C, Pi=100mW, Ui=10V, Ii=10mA;

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double(with inserts Ø3):

I-3

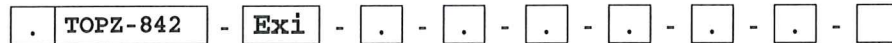
$-40^{\circ}\text{C} \leq \text{Ta} \leq 75^{\circ}\text{C}$, $\text{Pi}=100\text{mW}$, $\text{Ui}=10\text{V}$, $\text{Ii}=10\text{mA}$;

* Limited temperature class for higher electrical parameters.

- ambient temperature sensors



II 2G Ex ia IIC T6-T1 Gb
II 1D Ex ia IIIC T85°C Da



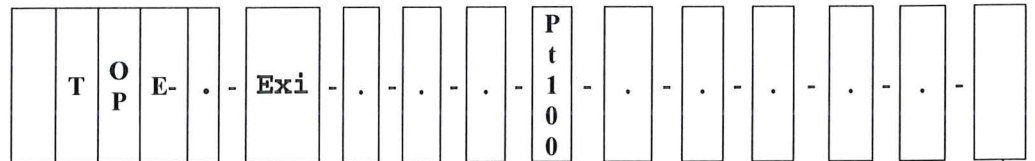
$-40^{\circ}\text{C} \leq \text{Ta} \leq 60^{\circ}\text{C}$, $\text{Pi}=150\text{mW}$, $\text{Ui}=45\text{V}$, $\text{Ii}=26\text{mA}$;

$-40^{\circ}\text{C} \leq \text{Ta} \leq 75^{\circ}\text{C}$, $\text{Pi}=100\text{mW}$, $\text{Ui}=10\text{V}$, $\text{Ii}=10\text{mA}$;

- cable sensors:



II 2G Ex ia IIC T6-T1 Gb
II 1D Ex ia IIIC T85°C Da



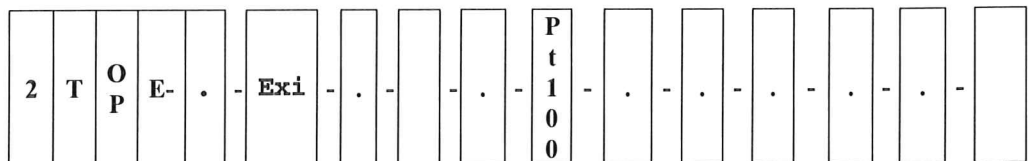
single

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$-40^{\circ}\text{C} \leq \text{Ta} \leq 60^{\circ}\text{C}$, $\text{Pi}=150\text{mW}$, $\text{Ui}=45\text{V}$, $\text{Ii}=26\text{mA}$;

$-40^{\circ}\text{C} \leq \text{Ta} \leq 75^{\circ}\text{C}$, $\text{Pi}=100\text{mW}$, $\text{Ui}=10\text{V}$, $\text{Ii}=10\text{mA}$;

blank
SP



double

the diameter of the sheath $d \geq 6$ [mm]

$-40^{\circ}\text{C} \leq \text{Ta} \leq 60^{\circ}\text{C}$, $\text{Pi}=150\text{mW}$, $\text{Ui}=45\text{V}$, $\text{Ii}=26\text{mA}$;

$-40^{\circ}\text{C} \leq \text{Ta} \leq 75^{\circ}\text{C}$, $\text{Pi}=100\text{mW}$, $\text{Ui}=10\text{V}$, $\text{Ii}=10\text{mA}$;

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a - b - c - properties are irrelevant for the explosion proof protection;

[16] Test Report:

"ATEX assessment report" KDB No 09.179-4.

[17] Special conditions of use:

- Ambient temperature range $-40^{\circ}\text{C} \leq T_a \leq +85^{\circ}\text{C}$.
- Temperature class of a sensor depends on the measured temperature. After mounting, it should be checked if temperature of any part doesn't exceed acceptable limits for potentially explosive atmosphere, materials and devices.
- Circuits temperature sensors with double measurement elements should be considered as electrically connected.

[18] Essential health and safety requirements:

Met by fulfilling the requirements of the following standards:

EN IEC 60079-0:2018; EN 60079-11:2012 EN 50303:2000

Document history:

- WE type examination certificate KDB 07ATEX055X, 0 edition of 15.06.2007, initial certification.
- EU type examination certificate KDB 07ATEX055X, 1 edition of 22.08.2022, supersedes certificate KDB 07ATEX055X, 0 edition of 15.06.2007r. Extended with a new version of the sensor. The list of harmonized standards and technical documentation has been updated.

