



# IECEx Certificate of Conformity

## INTERNATIONAL ELECTROTECHNICAL COMMISSION IEC Certification System for Explosive Atmospheres

for rules and details of the IECEx Scheme visit [www.iecex.com](http://www.iecex.com)

Certificate No.: **IECEx KDB 19.0003X** Page 1 of 6 [Certificate history:](#)

Status: **Current** Issue No: 0

Date of Issue: 2019-04-30

Applicant: **APLISENS S. A.**  
ul. Morelowa 7  
03-192 Warszawa  
Poland

Equipment: **Smart pressure transmitters type: APC-2000ALW, APC-2000ALW Safety; Smart differential pressure transmitters type: APR-2000ALW, APR-2200ALW, APR-2000ALW Safety, APR-2000GALW; Smart level probes type APR-2000YALW**

Optional accessory:

Type of Protection: **Equipment protection by flameproof enclosure "d", intrinsic safety "ia". Dust ignition protection by enclosure "t"**

Marking:

Ex db ia I Mb \*

Ex ia/db IIC T6/T5 Ga/Gb

Ex ia/tb IIIC T105°C Da/Db

or

Ex db ia I Mb \*

Ex ia/db IIC T6/T5 Gb

Ex ia/tb IIIC T105°C Db

Approved for issue on behalf of the IECEx  
Certification Body:

**mgr inż. Piotr Madej**

Position:

**Head of ExCB**

Signature:  
(for printed version)

Date:

1. This certificate and schedule may only be reproduced in full.
2. This certificate is not transferable and remains the property of the issuing body.
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Certificate issued by:

**Główny Instytut Górnictwa, Kopalnia Doświadczalna "BARBARA"**  
**(Central Mining Institute Experimental Mine "Barbara")**  
ul. Podleska 72  
43-190 Mikołów  
Poland





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or

Ex ia I Ma \*

Ex ia IIC T5/T4 Ga/Gb

Ex ia IIIC T105°C Da

\* - only stainless steel version of enclosure



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Manufacturer: **APLISENS S. A.**  
ul. Morelowa 7  
03-192 Warszawa  
**Poland**

Additional  
manufacturing  
locations:

This certificate is issued as verification that a sample(s), representative of production, was assessed and tested and found to comply with the IEC Standard list below and that the manufacturer's quality system, relating to the Ex products covered by this certificate, was assessed and found to comply with the IECEx Quality system requirements. This certificate is granted subject to the conditions as set out in IECEx Scheme Rules, IECEx 02 and Operational Documents as amended

#### STANDARDS :

The equipment and any acceptable variations to it specified in the schedule of this certificate and the identified documents, was found to comply with the following standards

**IEC 60079-0:2017** Explosive atmospheres - Part 0: Equipment - General requirements  
Edition:7.0

**IEC 60079-1:2014-06** Explosive atmospheres - Part 1: Equipment protection by flameproof enclosures "d"  
Edition:7.0

**IEC 60079-11:2011** Explosive atmospheres - Part 11: Equipment protection by intrinsic safety "i"  
Edition:6.0

**IEC 60079-26:2014-10** Explosive atmospheres – Part 26: Equipment with Equipment Protection Level (EPL) Ga  
Edition:3.0

**IEC 60079-31:2013** Explosive atmospheres - Part 31: Equipment dust ignition protection by enclosure "t"  
Edition:2

This Certificate **does not** indicate compliance with safety and performance requirements other than those expressly included in the Standards listed above.

#### TEST & ASSESSMENT REPORTS:

A sample(s) of the equipment listed has successfully met the examination and test requirements as recorded in:

Test Report:

[PL/KDB/ExTR19.0003/00](#)

Quality Assessment Report:

[PL/KDB/QAR12.0001/03](#)



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## EQUIPMENT:

Equipment and systems covered by this Certificate are as follows:

Pressure transmitters type APC-2000ALW, APC-2000ALW Safety; differential pressure transmitters type APR-2000ALW, APR-2200ALW, APR-2000ALW Safety, APR-2000GALW and level probes type APR-2000YALW convert resistance changes proportional to the measured pressure of piezoresistive bridge, located in the single crystal of silicon diaphragm, into a standard current signal  $4 \div 20$  mA with HART communications signal. Transmitters can be used for measurement of dense and aggressive media, at high and low temperatures.

The basic unit of the transmitter and the probe is a measuring head with a silicon diaphragm sensor, working in the intrinsically safe circuit (Ex ia), mounted in transmitter enclosure. Measuring heads can be equipped with different pressure connections. Inside the head there is the "pressure chamber" filled with manometer liquid. It is limited by a diaphragm welded tightly to the head's body, on the side of measured medium. Differential pressure transmitters have two separated diaphragms for the inputs: "+" and "-". Inside the head there is a bushing in which a measuring silicon diaphragm with piezoresistors is installed. The parts of the diaphragm seals can be coated with teflon.

Enclosures of transmitters are made of die-cast aluminium alloy or stainless steel. Enclosure consists of a body and two screwed covers (display cover and electrical connection cover). The cable is introduced into the enclosure by cable gland with thread M20x1,5 or 1/2NPT depending on the version of the enclosure body. In the non-used opening there is mounted plug (cap).

The device version including the flameproof enclosure requires use of flameproof cable gland and plug. Cable entries and plugs should also meet the requirements for dustproof covers (Ex tb). The device in the flameproof and dustproof version includes plug produced by Aplsens S.A..

The measuring head working in the intrinsically safe circuit (Ex ia), in the version of the device including the flameproof enclosure, is separated from the rest of the equipment by the bushing.

In the transmitter enclosure, is also installed a terminal strip allowing additional connection of the communicator and measurement of the output current, without interrupting the circuit.

## Technical parameters:

Range of the measured pressure:

-100kPa ÷ 100MPa (APC-2000ALW, APC-2000ALW Safety)

-50kPa ÷ 7MPa (APR-2000ALW, APR-2000ALW Safety)

-160kPa ÷ 1,6MPa (APR-2200ALW)

-10 kPa ÷ 10 kPa (APR-2000GALW)

Range of the measured liquid level:

0 ÷ -6mH<sub>2</sub>O (APR-2000YALW)

Output signal:

4 ÷ 20mA in a two-wire system + HART

## Device version Ex ia/db and Ex ia/tb:

Supply voltage:

U<sub>max</sub> = 55V DC (APC-2000ALW, APR-2000ALW, APR-2200ALW, APR-2000GALW, APR-2000YALW)

U<sub>max</sub> = 36V DC (APC-2000ALW Safety, APR-2000ALW Safety)



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Ambient temperature:  $-40 \div 40^{\circ}\text{C}$  (special version: from  $-50^{\circ}\text{C}$ )

Temperature class: T6

Ambient temperature:  $-40 \div 75^{\circ}\text{C}$  (special version: from  $-50^{\circ}\text{C}$ )

Temperature class: T5

Maximum surface temperature - version Ex ia/tb:  $105^{\circ}\text{C}$

Degree of protection: IP66 / IP67

## Device version Ex ia:

Supply voltage:  $U_{\text{max}} = 30\text{V DC}$

Ambient temperature:  $-40 \div 80^{\circ}\text{C}$  (special version: from  $-50^{\circ}\text{C}$ )

Temperature class: T5/T4

Maximum surface temperature:  $105^{\circ}\text{C}$

Degree of protection: IP66 / IP67

## Intrinsically safe parameters:

Supply from a power source with linear output characteristic:

$U_i=30\text{V}$        $L_i = 18\mu\text{H}$       Temperature class: T5

$I_i=100\text{mA}$        $C_i = 2,5\text{nF}$

$P_i=0,75\text{W}$

Supply from a power source with trapezoidal output characteristic:

$U_i=24\text{V}$        $L_i = 18\mu\text{H}$       Temperature class: T5

$I_i=50\text{mA}$        $C_i = 2,5\text{nF}$

$P_i=0,7\text{W}$

Supply from a power source with rectangular output characteristic:

$U_i=24\text{V}$        $L_i = 18\mu\text{H}$       Temperature class: T5

$I_i=25\text{mA}$        $C_i = 2,5\text{nF}$

$P_i=0,6\text{W}$

$U_i=24\text{V}$        $L_i = 18\mu\text{H}$       Temperature class: T4

$I_i=50\text{mA}$        $C_i = 2,5\text{nF}$

$P_i=1,2\text{W}$



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**SPECIFIC CONDITIONS OF USE: YES as shown below:**

- The maximum temperature of the external heating source cannot heat the transmitter above the maximum declared ambient temperature.
- Some gaps of flameproof joints are smaller and longer than those required in table 1 of standard IEC 60079-1. Relevant information for the user are included in the instruction.
- In hazardous zones of dust explosion, transmitters with painted aluminum enclosures, as well as transmitters equipped with plastic marking plates and diaphragm separator elements covered with a teflon layer, should be installed in a way that prevents electrostatic charging, in accordance with the instructions.
- The diaphragm separator containing titanium elements must be protected against mechanical impacts.
- An intrinsically safe transmitter version with surge arrester, marked on the nameplate as "SA" does not meet the requirements of clause 10.3 of IEC 60079-11 (500Vrms). The device should be installed in accordance with the instructions.
- In the case of use a transmitter with a nameplate containing various types of explosion-proof execution, the type of protection must be permanently marked on the nameplate before installation, according to the instructions.
- In the device version including the flameproof enclosure, the diaphragm should not be subject on damage during installation and exploitation of the transmitter. The transmitter diaphragm is made of stainless steel, Hastelloy alloy or tantalum and must not be exposed to medium that could cause its damage.