

IO.GIX-22-2.2.01
Ed. 01.001/02.15

APLISENS®

Produkcja Przemysłowej Aparatury
Pomiarowej i Elementów Automatyki

Operating Manual

GI22-2, GIX-22-2 Programmable 2-wire transmitter



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Ex marking

 II 1 G Ex ia IIC T6

Features

A Please note the Declaration of Conformity on page 14 and of the Type Examination Certificate on page 15.

1 Application / Conformity with standards

Application

The GIX-22-2 is a 2-wire head-mounted temperature transmitter which can be used with resistance thermometers and thermocouples. Preferably, it will be mounted into terminal heads Form B.

Conformity with standards

Fundamental safety and health requirements are met through the conformity with:

- EN 61326-1: 2013
- EN 60079-0: 2012 + A11:2013
- EN 60079-11: 2012
- EN 60079-26: 2007
- EN 1127-1: 2011

2 Safety notes

- The head-mounted temperature transmitter must be set up and operated in accordance with this Operating Manual and the relevant regulations and standards.
- The transmitter can be operated in device group II category 1 G (zone 0), in II 2 G (zone 1) and in II 3 G (zone 2).
- If the transmitter is operated in II 2 G (zone 1) or in II 3 G (zone 2), the sensor current circuit may be present in II 1 G (zone 0).
- If the transmitter is operated in II 1 G (zone 0), care must be taken that inflammable vapor-air mixtures only occur within the atmospheric conditions. If no inflammable mixtures are present, or additional measures according to EN 1127-1 have been taken, the devices may also be operated outside the atmospheric conditions, in accordance with the manufacturer's specifications.

Atmospheric conditions
$-20^{\circ}\text{C} \leq T_a \leq +60^{\circ}\text{C}$
$0.8\text{bar} \leq p \leq 1.1\text{bar}$

- The transmitter must **not** be configured within the hazardous area using the PC setup program.
- When configuring with the aid of a standard PC, the maximum safe voltage ($U_m = 30\text{V}$) must not be exceeded. The use of a battery-operated PC (notebook) is ideal.
For safety reasons (protection of Ex-relevant components), the connection must only be made briefly, for configuration.
- The supply circuit must conform to the explosion protection Ex ia IIC.
- For transmitters (case material PC, encapsulated material PUR) or mounting heads, it must be ensured that the device materials are compatible with the measured media.

2 Safety notes

- The ambient temperatures must not exceed the limit values specified in the table below.
- The transmitter must be set up in such a way as to provide at least IP20 protection according to EN 60529, also for the connecting parts.
- During setting up and operation of the transmitter, any build-up of electrostatic charge must be avoided.

Extract from the EC Type Examination Certificate ZELM 11 ATEX 0452 X

Ex marking	Ex II 1 G Ex ia IIC T6
Temperature range in II 2 G and II 3 G	T6: $T_{\text{amb}} = -40$ to $+55^{\circ}\text{C}$ T5: $T_{\text{amb}} = -40$ to $+70^{\circ}\text{C}$ T4: $T_{\text{amb}} = -40$ to $+75^{\circ}\text{C}$
Temperature range in II 1 G	T6: $T_{\text{amb}} = -40$ to $+40^{\circ}\text{C}$ T5: $T_{\text{amb}} = -40$ to $+50^{\circ}\text{C}$ T4: $T_{\text{amb}} = -40$ to $+60^{\circ}\text{C}$
Supply circuit maximum values at terminals 1(+) and 2(-) internal inductance and capacitance	$U_i = 30\text{VDC}$ $I_i = 100\text{mA}$ $P_i = 750\text{mW}$ $L_i = \text{negligible}$ $C_i = \text{negligible}$
Sensor current circuit maximum values at terminals 3, 4, 5 and 6 max. permissible external inductance/capacitance Ex ia IIC Ex ia IIB	$U_o = 9.6\text{VDC}$ $I_o = 4.5\text{mA}$ $P_o = 11\text{mW}$ $L_o = 4.5\text{mH} / C_o = 709\text{nF}$ $L_o = 8.5\text{mH} / C_o = 1300\text{nF}$

3 Type designation/labels

GIX-22-2

(1) Basic version

GIX-22-2 programmable 2-wire transmitter



(2) Input (programmable)

Pt, Ni, L, J, T, U, E, K, N, S, R

(3) Output (proportional DC current - programmable)

factory-set (4 — 20mA)

custom configuration (20 — 4mA)

(4) Measureing range (°C)

(5) Alarm signal(mA)

	(1)	(2)	(3)	(4)	(5)
Order code	<input type="text"/>	/ <input type="text"/>	/ <input type="text"/>	÷ <input type="text"/>	/ <input type="text"/>
Order example	GIX-22-2/	K /	4 - 20 ÷	0 - 400 /	23

Standard accessories

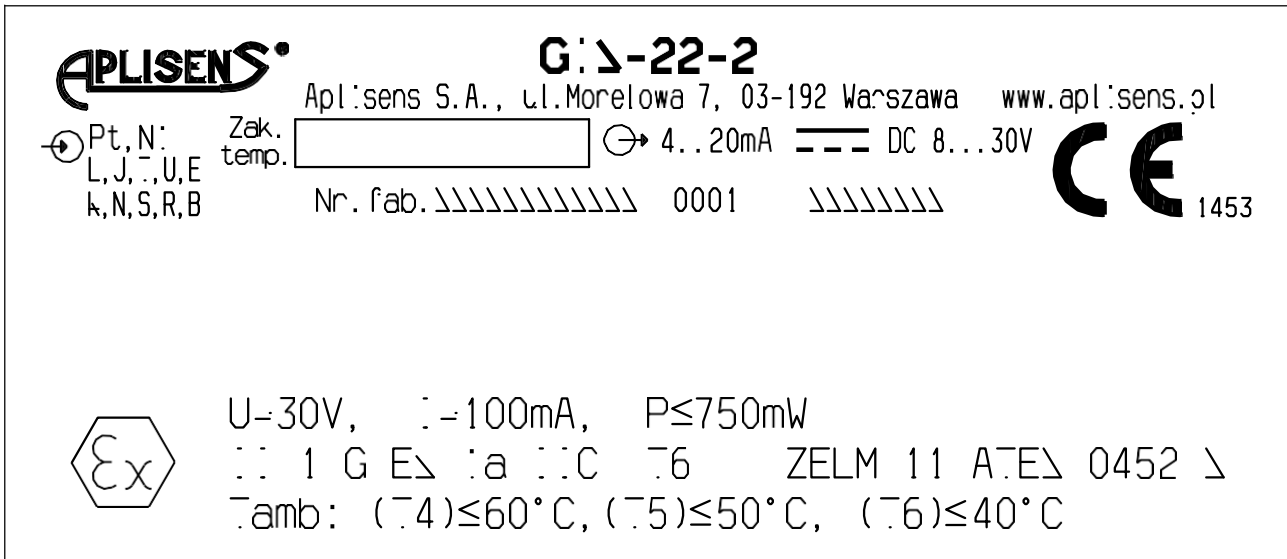
- 1 Operating Manual
- fixing items (2 screws, 2 compression springs)

Accessories

- PC setup program, multilingual
- PC interface with TTL/RS232 converter and adapter (sockets)
- PC interface with USB/TTL converter, adapter (sockets) and adapter (pins)

3 Type designation/labels

The labels shown below are attached to the transmitter housing.



The „Nr. fab.“ (fabrication number) indicates the production date (year/week). The figures concerned are in position 12, 13, 14, 15.

Example:

Nr. fab. 01367771010**1503**0001

This shows that the transmitter was manufactured in 2015, week 3.

4 Technical data

- Ex marking:

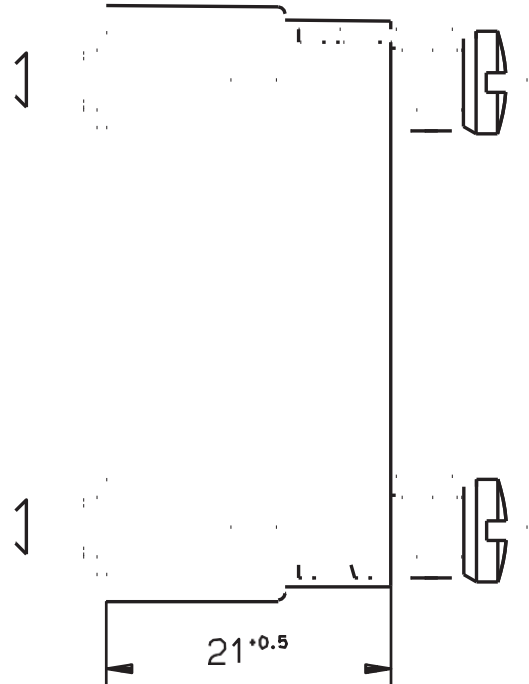
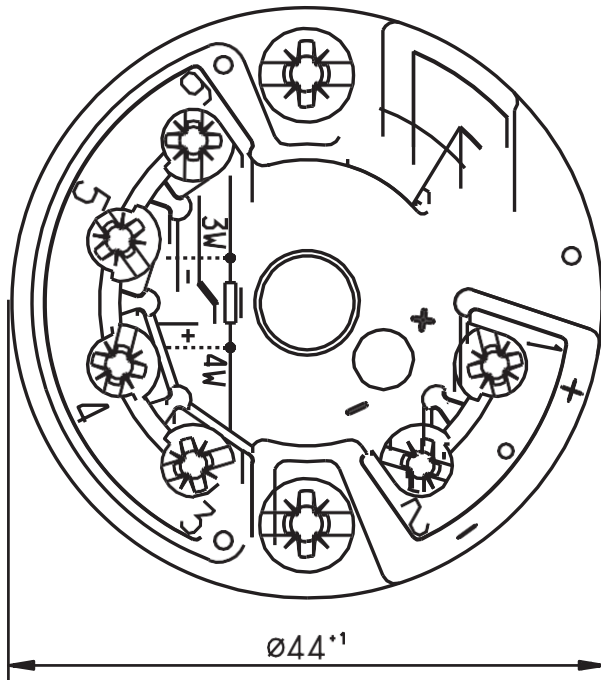
 II 1 G Ex ia IIC T6

- EC type examination certificate: ZELM 11 ATEX 0452
X see Chapter 2 “Safety notes” and
Chapter 9 “Type Examination Certificate”
- Declaration of Conformity:
see Chapter 8 “Declaration of Conformity”
- Data Sheet: GIX-22-2

5 Installation

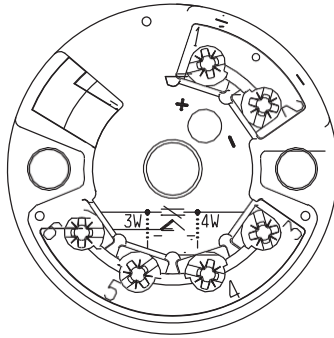
The regulations according to ElexV and this Operating Manual apply when setting up and operating the transmitter. It is imperative to observe the maximum ambient temperature (see Chapter 2 “Safety notes”).

Dimensions



5 Installation

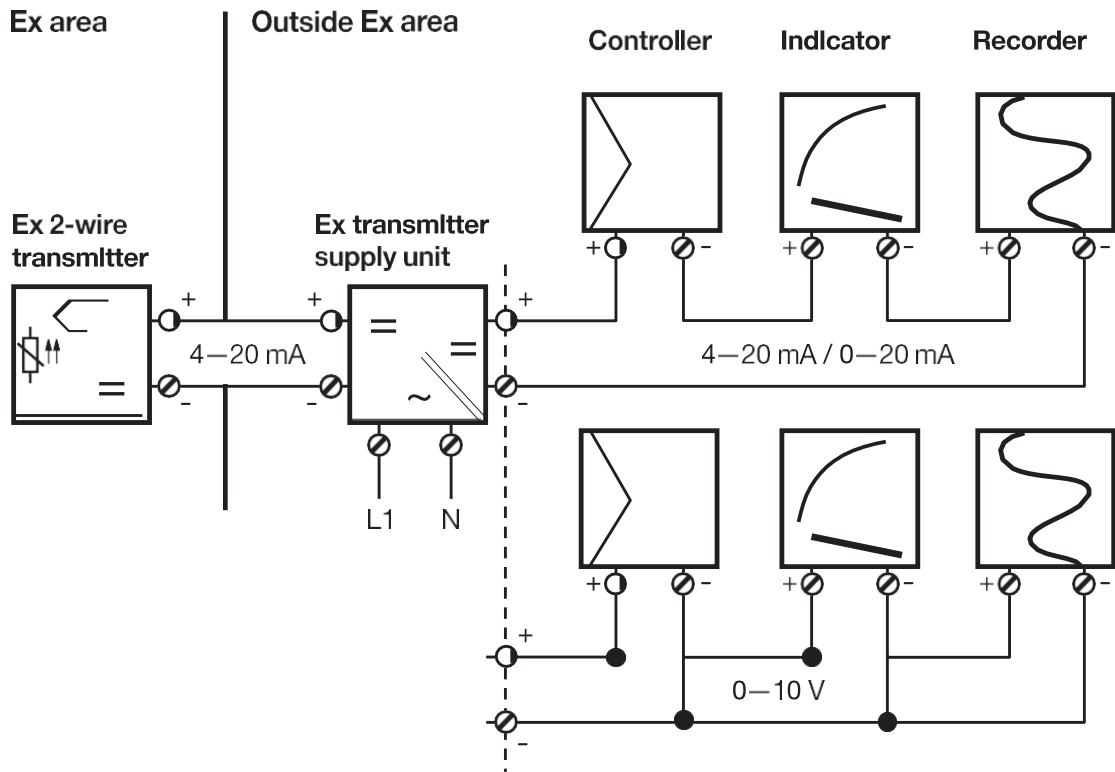
Connection diagram



Connection for	Terminals	
Supply 8 — 30V DC or current output 4 — 20mA	+1 -2	$R_B = \frac{U_b - 8V}{22mA}$ $R_B = \text{burden resistance}$ $U_b = \text{supply}$
Ex version only in combination with a certified Ex transmitter supply unit!		
Analog inputs		
Resistance thermometer in 4-wire circuit	3 4 5 6	$R_L \leq 11\Omega$ $R_L = \text{lead resistance per conductor}$
Resistance thermometer in 3-wire circuit	3 5 6	$R_L \leq 11\Omega$ $R_L = \text{lead resistance per conductor}$
Resistance thermometer in 2-wire circuit	3 6	$R_L \leq 11\Omega$ $R_L = \text{lead resistance per conductor}$
Thermocouple	+4 -6	
Ex version: please note the connection data for the Ex input circuit!		

5 Installation

Example of connection with supply unit/isolator



6 Maintenance

The appropriate regulations concerning maintenance, repair and testing must be observed. In particular, all parts on which explosion protection depends must be checked during maintenance.

The transmitter must never be configured inside the hazardous area via the setup circuit. For safety reasons (protection of Ex-relevant components), the connection outside the hazardous area may only be made for the purpose of brief configuration.

7 Setup interface and fine calibration

Setup interface

The setup interface is available for configuring the transmitter from a PC. The connection is via the PC interface with a TTL/RS232 converter (or USB/TTL converter) and adapter.

The cover flap must be closed after programming. Configurable parameters:

- tag number (10 characters)
- sensor type
- connection circuit (2-/3-/4-wire)
- external or internal cold junction
- custom linearization
- range limits
- output signal rising/falling (inversion)
- digital filter
- response to probe break/short-circuit
- recalibration (fine calibration)
- lead resistance for 2-wire circuit

If no Ex supply unit (supply isolator) is available, the 2-wire transmitter can also be configured using a 9V block battery.

Fine calibration

Fine calibration means adjustment of the output signal. The signal can be adjusted within $\pm 5\%$ of the 20mA end value. Fine calibration is performed using the setup program. Values for 4 mA (zero point), 20 mA (full scale) and offset can be calibrated separately, using the setup program.

8 Declaration of Conformity



EC Declaration of Conformity

Document no. DZ.GIX-22-2.ATX-2.Z1.ENG

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

We hereby acknowledge, that:

Head-mounted temperature transmitter **GIX-22-2, ATX-2**
in all versions comply with directive

- **EMC – 2004/108/WE**

The following standard was applied PN-EN 61326-1:2009

- **ATEX – 94/9/WE**

Head-mounted temperature transmitters in Intrinsically Safe version are marked with the following certificate marking:

II 1G Ex ia IIC T6

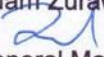
Certificate no. ZELM 11 ATEX 0452X

Certificates were issued by Notified Body ZELM ex, Siekgraben 56,
38-124 Braunschweig.

The following standards were applied: EN60079-0:2009, EN 60079-11:2007,
EN 60079-26:2007, EN 1127-1:2007.

Warsaw, 20th May 2011

Adam Żurawski


General Manager

needs to be replaced

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Certificate ISO 9001:2008
No. 63378-2009-AQ-POL-FINAS
Development, manufacture and sales
of pressure and differential pressure transmitters,
level probes and control instruments.

9 Type Examination Certificate

(1) EC-TYPE-EXAMINATION CERTIFICATE

ZELM ex

- (2) Equipment and Protective Systems Intended for Use in Potentially Explosive Atmospheres - **Directive 94/9/EC**
- (3) EC-TYPE-EXAMINATION CERTIFICATE Number:

ZELM 11 ATEX 0452 X

- (4) Equipment: **Head transmitter type ATX-2 and type GIX-22-2**
- (5) Manufacturer: **Aplisens S.A.**
- (6) Address: **ul. Morelowa 7, PL-03-192 Warszawa**
- (7) This equipment and any acceptable variation thereto are specified in the schedule to this certificate and the documents therein referred to.
- (8) The Prüf- und Zertifizierungsstelle ZELM Ex, notified body No. 0820 in accordance with Article 9 of the Council Directive 94/9/EC of 23 March 1994, certifies that this equipment 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.
- The examination and test results are recorded in the confidential report ZELM Ex 1691013824.
- (9) Compliance with the Essential Health and Safety Requirements has been assured by compliance with:
- EN 60079-0:2009 EN 60079-11:2007 EN 60079-26:2007 EN 1127-1:2007**
- (10) If the sign "X" is placed after the certificate number, it indicates that the equipment is subject to special conditions for safe use specified in the schedule to this certificate.
- (11) This EC-type-examination Certificate relates only to the design, examination and tests of the specified equipment or protective system in accordance to the Directive 94/9/EC. Further requirements of the Directive apply to the manufacturing process and supply of this equipment or protective system. These are not covered by this Certificate.
- (12) The marking of the equipment shall include the following:

 II 1 G Ex ia IIC T6

Braunschweig, 2011-02-14

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Zertifizierungs-
stelle


Zertifizierungsstelle ZELM ex
Dipl.-Ing. Harald Zelm



Sheet 1 of 3

EC-type-examination Certificates without signature and stamp are not valid. The certificates may only be circulated without alteration. Extracts or alterations are subject to approval by the Prüf- und Zertifizierungsstelle ZELM ex. The English version is based on the German text. In the case of dispute, the German text shall prevail.

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9 Type Examination Certificate

(13)

SCHEDULE

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(14) **EC-TYPE-EXAMINATION CERTIFICATE ZELM 11 ATEX 0452 X**

(15) Description of equipment

The head transmitter type ATX-2 and type GIX-22-2 is used for the signal conversion of resistance thermometers, thermocouples, resistance-type sensors and voltage sensors in a 4...20 mA current loop. The current input loop and signal output are freely scalable via an interface. The measured value registration is realized by A/D conversion. The registered data are evaluated via a D/A converter as a measurement signal in the 4...20 mA current loop. The available galvanical isolation is a function isolation between sensor circuit and supply circuit.

To the head transmitter type ATX-2 resistance thermometers can be connected.

To the head transmitter type GIX-22-2 resistance thermometers and thermocouples can be connected.

The head transmitter can be used in the hazardous location. The head transmitter is to be installed in a way which guarantees protection IP20 according to EN 60529 at least for all connectors as well.

The ambient temperature ranges depending on the temperature class are to be taken from the following table:

Lower ambient temperature limit	Upper ambient temperature limit	Temperature class
-40°C	+55°C	T6
-40°C	+70°C	T5
-40°C	+85°C	T4

Electrical Data

Supply circuit
[terminals 1(+) and 2(-)]

in type of protection Intrinsic Safety Ex ia IIC
for connection to a certified intrinsically safe circuit with the following maximum values:

$$\begin{aligned}U_i &= 30 \text{ V} \\I_i &= 100 \text{ mA} \\P_i &= 750 \text{ mW}\end{aligned}$$

Effective internal capacitance and effective internal inductance are negligibly small.

Setup circuit

only for a short-time connection of a standard personal computer to suitable connection.
Maximum r.m.s a.c or d.c voltage $U_m = 30 \text{ V}$.

Sensor circuit
(terminals 3, 4, 5 and 6)

in type of protection Intrinsic Safety Ex ia IIC resp. Ex ia IIB

maximum values:

$$\begin{aligned}U_o &= 9,6 \text{ V} \\I_o &= 4,5 \text{ mA} \\P_o &= 11 \text{ mW}\end{aligned}$$

(linear output characteristic)

Sheet 2 of 3

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9 Type Examination Certificate

Schedule
to EC-Type-Examination Certificate ZELM 11 ATEX 0452 X

ZELM ex

IIC resp. IIB

Max. permissible external inductance	4,5 mH	8,5 mH
Max. permissible external capacitance	709 nF	1300 nF

The supply circuit and the sensor circuit are to be considered in a combined manner to be galvanic with each other. The technical function of isolation remains.

(16) Report No.

ZELM Ex 1691013824

(17) Special conditions for safe use

The configuration via the setup circuit is only permitted in non-hazardous locations. In this case, none of the connections may be laid into the hazardous location.

The head transmitter is to be installed in a way which guarantees protection IP20 according to EN 60529 at least for all connectors as well.

The head transmitter is to be installed in such a way, that no electrostatic charge is possible.

The instruction manual has to be observed, in particular with regard to the consideration of lesser ambient temperatures during the application in accordance with category 1.

(18) Essential Health and Safety Requirements

met by standards

Braunschweig, 2011-02-14

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9 Type Examination Certificate

1. Supplement

(Supplement according to EC-Directive 94/9 Annex III letter 6)

ZELM ex

to EC-type-examination Certificate

ZELM 11 ATEX 0452 X

Equipment: **Head transmitter type ATX-2 and type GIX-22-2**

Manufacturer: **Aplisens S.A.**

Address: **ul. Morelowa 7, PL-03-192 Warszawa**

Description of supplement

Within the scope of this 1. Supplement there was a changeover to a new casting compound and a safety-relevant diode is replaced in future by a successor type. These changes have a bearing on the ambient temperature range so that the maximum ambient temperature for the temperature class T4 has to be reduced. The ambient temperatures are in future:

Lower ambient temperature limit	Upper ambient temperature limit	Temperature class
-40°C	+55°C	T6
-40°C	+70°C	T5
-40°C	+75°C	T4

In Future the maximum temperature range for the use in category 1 under consideration of the reduction according to EN 1127-1:2007 will be marked on the type plate.

The electrical and all other data as well as the Special conditions for safe use according to the EC-type-examination Certificate ZELM 11 ATEX 0452 X remain unchanged and are also valid for this 1. Supplement.

The head transmitter type ATX-2 and type GIX-22-2 may also be manufactured in future under consideration of this 1. Supplement.

Report No.

ZELM Ex 0711213937

Essential Health and Safety Requirements

The essential health and safety requirements are still fulfilled by compliance with the following Standards:

EN 60079-0:2009

EN 60079-11:2012

EN 60079-26:2007

EN 1127-1:2007

Braunschweig, 2012-09-21

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stelle

Zertifizierungsstelle ZELM ex
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Sheet 1 of 1

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9 Type Examination Certificate

2. Supplement

(Supplement according to EC-Directive 94/9 Annex III letter 6)

ZELM ex

to EC-type-examination Certificate

ZELM 11 ATEX 0452 X

Equipment: **Head transmitter type ATX-2 and type GIX-22-2**

Manufacturer: **APLISENS S.A.**

Address: **ul. Morelowa 7, PL-03-192 Warszawa**

Description of supplement

The 2. Supplement concerns the consideration of minor modifications of the design of the equipment and the examination of the equipment for compliance to the applicable requirements of the current Standards.

The marking, the permissible ambient temperatures, the electrical and all further technical data as well as the Special conditions for safe use according to the EC-type-examination Certificate ZELM 11 ATEX 0452 X incl. the 1. Supplement remain unchanged and are also valid for this 2. Supplement.

The head transmitter type ATX-2 and type GIX-22-2 may also be manufactured in future under consideration of this 2. Supplement.

Report No.

ZELM Ex 05315131080

Essential Health and Safety Requirements

The essential health and safety requirements are still fulfilled by compliance with the following Standards:

**EN 60079-0:2012
+ A11:2013**

EN 60079-11:2012

EN 60079-26:2007

EN 1127-1:2011

ZELM ex

**Zertifizierungs-
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Braunschweig, 2015-04-13



Zertifizierungsstelle ZELM ex
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