



(1) **EC-Type Examination Certificate**

- (2) Equipment or protective system intended for use in potentially explosive atmospheres - **Directive 94/9/EC**
- (3) Examination certificate number: **SEV 14 ATEX 0168 X**
- (4) Equipment: pH-Sensor  
Types InPro 2XXX, InPro 3XXX, InPro 4XXX
- (5) Manufacturer: **METTLER-TOLEDO AG**
- (6) Address: **Process Analytics, Im Hackacker 15, CH-8902 Urdorf**
- (7) The equipment and any acceptable variation thereto is specified in the schedule to this certificate and the documents therein referred to.
- (8) Electrosuisse SEV, notified body No. 1258 in accordance with article 9 of the Council Directive of the European Communities of 23 March 1994 (94/9/EC), certifies that this equipment has been found to comply with the essential health and safety requirements relating to the design and construction of equipment or protective systems intended for use in potentially explosive atmospheres given in Annex II to the Directive.  
The results of the examination are recorded in confidential report no. 14-Ex-0105.01
- (9) Compliance with the essential health and safety requirements has been assured by compliance with:  
**EN 60079-0:12 + A11:13    EN 60079-11:12    EN 60079-26:07**
- (10) If the sign «X» is placed after the certificate number, it indicates that the equipment or protective system is subjected to special conditions for safe use specified in the schedule to this certificate.
- (11) This examination certificate relates only to design and construction of the specified equipment in accordance with the directive 94/9/EC. Further requirements of this directive apply to the manufacturing process and the placing on the market of the equipment.
- (12) The marking of the equipment shall include the following:



**Ex ia IIC T6/T5/T4/T3 Ga/Gb**



**Electrosuisse  
Notified Body ATEX**

Martin Plüss  
Product Certification



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(13)

## Appendix

(14)

### EC-Type Examination Certificate

(15) Description of the equipment

Intrinsically safe pH sensors types InPro2XXX, InPro3XXX and InPro4XXX are used for simultaneous measurement of pH and temperature, in industrial processes.

They are connected with a rugged connector to the intrinsically safe circuits of a separately certified measuring system. The mechanical protection of the equipment is ensured by an independent fitting from METTLER TOLEDO type InFit Type 76 \* - \*\*\* or InTrac type 77 \* - \*\*\*, or other appropriate fitting.

#### Notes:

The pH sensors (type InPro 2XXX, InPro 3XXX, and InPro 4XXX) were previously evaluated for category 1/2G protection intrinsic safety "Ex ia IIC" according to EN 60079:2006, EN 60079-11:2007, EN 60079-26:2007, test report No. 00-IK-0424.01, extension 5, certificate SNCH 00 ATEX 3130X.

The digital version of pH sensor consists of digital sensors (type DsMini4) which is integrated and encapsulated in connector K8S.

The digital sensors (type DsMini4) was previously evaluated as Ex-Component for category 2G protection intrinsic safety "Ex ia IIC" according to EN 60079:2006, and EN 60079-11:2007, and category 2D protection intrinsic safety "Ex iaD" according to EN 61241-0:2006 and 61241-11:2006, test report No. 05-IK-0032.02.

The digital sensors (type DsMini4) are integrated and encapsulated in connector K8S.

Extremely small Ex-Component without marking as it is always only used together with devices of the manufacturer Mettler-Toledo.

The digital sensors type DsMini4 have the following functions: Conditioning of analogue signal, digitization of measuring signals, diagnostic routines for determination of the remaining lifetime, maintenance and calibration intervals, communication with an evaluator, storage of relevant sensor data.

pH ISM qualification Kit is a set of 5 different sensor plug-in heads, than can be used for the simulation of pH sensors, quick checks and loop trouble shooting.

## Ratings

Analog pH sensor  
pH measurement circuit, temperature  
measurement circuit and  
data chip circuits

With type of protection intrinsic safety Ex ia IIC.  
Only for connection to certified intrinsically safe  
circuits. Maximum values:

$$\begin{aligned} U_i &\leq 16 \text{ V} \\ I_i &\leq 30 \text{ mA} \\ P_i &\leq 50 \text{ mW} \end{aligned}$$

or

$$\begin{aligned} U_i &\leq 16 \text{ V} \\ I_i &\leq 190 \text{ mA} \\ P_i &\leq 200 \text{ mW} \end{aligned}$$

$$\begin{aligned} L_i &= 0 && \text{(effective internal inductance)} \\ C_i &= 900 \text{ pF} && \text{(effective internal capacitance)} \end{aligned}$$

The values above apply, each as the sum of all the individual circuits of the associated intrinsically safe supply and evaluation unit (transmitter).

Digital pH sensor  
Two-wire current circuit

With type of protection intrinsic safety Ex ia IIC.  
Only for connection to certified intrinsically safe  
circuits. Maximum values:

$$\begin{aligned} U_i &\leq 16 \text{ V} \\ I_i &\leq 30 \text{ mA} \\ P_i &\leq 50 \text{ mW} \end{aligned}$$

$$\begin{aligned} L_i &= \text{negligible} \\ C_i &= \text{negligible} \end{aligned}$$



## Notes

1. According to Directive 94/9/EC (ATEX 95) Appendix I, the pH sensors type InPro2XXX, InPro 3XXX, and InPro 4XXX are devices of equipment group II, category 1/2G which, according to Directive 99/92/EC (ATEX 137) can be used in zones 0/1 or 1/2 or 1 or 2 as well as gas groups IIA, IIB and IIC, which are potentially explosive due to combustible substances in the temperature classes T3 to T6.

The requirements specified in EN 60079-14 must be observed during use / installation.

2. For the analog version of the pH electrode, the pH measurement circuit, temperature measurement circuit and data chip circuit are part of a common intrinsically safe system and are jointly connected to and operated by a separately certified transmitter.
3. The digital version of the pH sensor is connected to and operated by a two-wire cable to the certified transmitter.
4. The intrinsically safe circuits are galvanically isolated from the non-intrinsically safe circuits up to a nominal voltage peak value of 375 V and from the earthed parts up to up to a nominal voltage peak value of 30 V.

(16) Test Report

14-Ex-0105.01

(17) Special conditions for safe use

1. The relationship between the maximum permissible ambient or media temperature and temperature class is shown in the following table:

With analog pH sensor:

For  $U_i \leq 16 \text{ V}$ ,  $I_i \leq 30 \text{ mA}$ ,  $P_i \leq 50 \text{ mW}$ ;

pH measuring circuit, temperature measurement circuit, and data chip circuit:

temperature class	maximum ambient or media temperature
T6	62 °C
T5	74 °C
T4	102 °C
T3	154 °C

or

For  $U_i \leq 16 \text{ V}$ ,  $I_i \leq 190 \text{ mA}$ ,  $P_i \leq 200 \text{ mW}$ ;

pH measuring circuit, temperature measurement circuit, and data chip circuit:

temperature class	maximum ambient or media temperature
T6	51 °C
T5	63 °C
T4	91 °C
T3	143 °C

or

With digital pH sensor:

For  $U_i \leq 16 \text{ V}$ ,  $I_i \leq 30 \text{ mA}$ ,  $P_i \leq 50 \text{ mW}$ ;

two-wire current circuit:

temperature class	maximum ambient or media temperature
T6	62 °C
T5	74 °C
T4	102 °C
T3	154 °C

2. The capacitance and inductance of the connecting cable has to be considered.
3. The pH sensors types InPro 2XXX, InPro 3XXX, and InPro 4XXX can be used in/with the fittings InFit 76\*-\*\*\* or InTrac 7\*\*-\*\*\*, or in/with other suitable fittings in potentially explosive areas.  
The metal body of the pH sensors, or the fitting InFit76 \* - \*\*\* or InTrac7 \*\* - \*\*\* , or other appropriate fitting is optionally included in the routine pressure test of the system.
4. The independent fitting used for installation of pH electrodes must be conductively connected to the equipotential bonding system.

- (18) Fundamental essential health and safety requirements  
Fulfilled by the standards applied.



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