(1) EU-TYPE EXAMINATION CERTIFICATE

(2) Equipment and Protective Systems intended for use in Potentially Explosive Atmosphere - **Directive 2014/34/EU**

(3) EU-Type Examination Certificate Number

TÜV 16 ATEX 7938 X

Issue: 00

(4) Equipment: **H220X transmitter type 243081-****

(5) Manufacturer: **Hamilton Bonaduz AG**

(6) Address: **Via Crusch 8,**
7402 Bonaduz, Switzerland

(7) This product and any acceptable variation thereto are specified in the schedule to this certificate and the documents therein referred to.

(8) The certification body for explosion protection of TÜV Rheinland Industrie Service GmbH, Notified Body No. 0035 in accordance with Article 21 of the Council Directive 2014/34/EU of 26th February 2014, certifies this product which 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 atmosphere, given in Annex II to the Directive.

The examination and test results are recorded in the confidential report 557 / Ex 7938.00 / 16. Compliance with the Essential Health and Safety Requirements, with the exception of those listed in the schedule of this certificate, has been assessed by reference to:

EN 60079-0:2012+A11:2013 **EN 60079-11:2012**

(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 EU-Type Examination Certificate relates only to the design and specification for construction of the equipment or protective system. It does not cover the process for actual manufacture or supply of the equipment or protective system, for which further requirements of the directive are applicable.

II (1)2 G Ex ib [ia Ga] IIC T6/T4 Gb

TÜV Rheinland certification body for explosion protection Cologne, 2016-12-14

Dipl.-Ing. Andreas Maschke

This EU-Type Examination Certificate without signature and stamp shall not be valid.
This EU-Type Examination Certificate may be circulated only without alteration. Extracts or alterations are subject to approval by the TÜV Rheinland Industrie Service GmbH TÜV Rheinland Group Am Grauen Stein 51105 Köln.
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(13) Annex

(14) # EU-Type Examination Certificate

TÜV 16 ATEX 7938 X Issue: 00

(15) Description of equipment

15.1 Equipment and type:

H220X transmitter type 243081-**

Asterisk	Description
1	Connecting sensor types: 1 = H220X COND: Conductivity, conductive measurement 2 = H220X CONDI: Conductivity, inductive measurement 3 = H220X pH MS: Digital Sensor pH 4 = H220X DO MS: Digital Sensor Dissolved Oxygen 5 = H220X pH: pH / mV + Temperature
2	Administrative Data (Numbers 1 or 2)

15.2 General product information

The H220X transmitter type 243081-** is a two-wire transmitter for liquid analysis in all areas of process engineering. The primary applications comprise:
- Chemical processes
- Pharmaceutical industry
- Food technology

The H220X transmitter can acquire different parameters in analytical measuring technology, such as for example pH value, electrolytic conductivity or dissolved oxygen.

It consists of a plastic enclosure, a display with operating elements, and terminals for external connection of the intrinsically safe circuits.

15.3 Technical Data

15.3.1 Electrical ratings

Communication circuits

Current outputs, 24301-** (H220X/ 243081-**)

Current output 1 in type of protection Ex ib IIC

Terminals: 133-134

Maximum input voltage	U_i	30 V
Maximum input current	I_i	100 mA
Maximum input power	P_i	800 mW
Effective internal capacitance	C_i	1.2 nF
Effective internal inductance	L_i	29 µH

Current output 2 in type of protection Ex ib IIC

Terminals: 233-234

Maximum input voltage	U_i	30 V
Maximum input current	I_i	100 mA
Maximum input power	P_i	800 mW
Effective internal capacitance	C_i	0.2 nF
Effective internal inductance	L_i	24 µH

Sensor circuits

Conductive conductivity sensors (H220X COND/ 243081-1*)

Sensor input in type of protection Ex ia IIC

Terminals: 111-113, 219-222

Maximum output voltage	U_o	10.08 V
Maximum output current	I_o	23 mA
Maximum output power	P_o	57 mW
Effective internal capacitance	C_i	21 nF
Effective internal inductance	L_i	305 µH
Effective external capacitance	C_o	50 nF
Effective external inductance	L_o	300 µH

Inductive conductivity sensors (H220X CONDI/ 243081-2*)

Sensor input in type of protection Ex ia IIC

Terminals: 111-113, 215-218

Maximum output voltage	U_o	10.08 V	
Maximum output current	I_o	64 mA	
Maximum output power	P_o	128 mW	
Effective internal capacitance	C_i	62 nF	(only internally, not effective)
Effective internal inductance	L_i	305 µH	(only internally, not effective)
Effective external capacitance	C_o	1.8 µF	
Effective external inductance	L_o	0.1 mH	

MEMOSENS sensor input (H220X pH MS/ 243081-3* and H220X DO MS/ 243081-4*)

Sensor input in type of protection Ex ia IIC

Terminals: 187-188, 197-198

Maximum output voltage	U_o	5.04 V	
Maximum output current	I_o	80 mA	
Maximum output power	P_o	112 mW	
Effective internal capacitance	C_i	12.4 µF	(only internally, not effective)
Effective internal inductance	L_i	160.4 µH	(only internally, not effective)

For connection to separately tested and certified MEMOSENS devices (BVS 11 ATEX E 038 X).

Analog pH/ ORP sensors (H220X pH/ 243081-5*)

pH/ ORP and temperature sensor input in type of protection Ex ia IIC

Terminals: 317–320; 111-113

Maximum output voltage	U_o	10.08 V
Maximum output current	I_o	4.1 mA
Maximum output power	P_o	10.2 mW
Effective internal capacitance	C_i	28.9 nF
Effective internal inductance	L_i	305 µH
Effective external capacitance	C_o	250 nF
Effective external inductance	L_o	1 mH

pH-ISFET sensor input and temperature in type of protection Ex ia IIC

Terminals: 315–320; 111-113

Maximum output voltage	U_o	10.08 V
Maximum output current	I_o	50.7 mA
Maximum output power	P_o	128 mW
Effective internal capacitance	C_i	28.9 nF
Effective internal inductance	L_i	305 µH
Effective external capacitance	C_o	250 nF
Effective external inductance	L_o	1 mH

15.3.2 Thermal ratings

Ambient temperature range	For T6	$-20\ °C \leq T_a \leq +50\ °C$
	For T4	$-20\ °C \leq T_a \leq +55\ °C$

(16) Test report no. 557 / Ex 7938.00 / 16

(17) Special conditions for safe use

Only sensors, intended for use according to the user instruction, must be connected.
The rated values of input and output circuits must be followed.

(18) Basic Safety and Health Requirements

Covered by afore mentioned standard.

TÜV Rheinland certification body for explosion protection — Cologne, 2016-12-14

Dipl.-Ing. Andreas Maschke