Translation

1 # EU-Type Examination Certificate

2 **Directive 2014/34/EU of the European Parliament and of the Council of 26 February 2014**

3 EU-Type Examination Certificate Number: **BVS 16 ATEX E 133 X** Issue: **01**

4 Equipment: **Sensor types HPC010P******Z*****; HPC015P******Z*****; HPC020P******Z*****

5 Manufacturer: **Micro Motion Inc.**

6 Address: **7070 Winchester Circle, Boulder, Co. 80301, United States of America**

7 This product and any acceptable variations thereto are specified in the appendix to this certificate and the documents referred to therein.

8 DEKRA Testing and Certification GmbH, Notified Body number 0158, in accordance with Article 17 of Directive 2014/34/EU of the European Parliament and of the Council, dated 26 February 2014, certifies that this product has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of products 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 No. BVS PP 16.2216 EU.
This issue of the EU-Type Examination Certificate replaces the previous issue of the EU-Type Examination Certificate BVS 16 ATEX E 133 X including supplements 1 to 2.

9 Compliance with the Essential Health and Safety Requirements has been assured by compliance with:

EN IEC 60079-0:2018	**General requirements**
EN 60079-11:2012	**Intrinsic Safety "i"**

10 If the sign "X" is placed after the certificate number, it indicates that the product is subject to the "Specific Conditions of Use" listed under item 17 of this certificate.

11 This EU-Type Examination Certificate relates only to the technical design of the specified product in accordance to the Directive 2014/34/EU. Further requirements of the Directive apply to the manufacturing process and supply of this product. These are not covered by this certificate.

12 The marking of the product shall include the following:

II 2G Ex ib IIC T6...T1 Gb
II 2D Ex ib IIIC T°C Db**

DEKRA Testing and Certification GmbH
Bochum, 2023-09-06

Signed: Oliver Brumm

Managing Director

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13 **Appendix**

14 **EU-Type Examination Certificate**

BVS 16 ATEX E 133 X issue 01

15 **Product description**

15.1 **Subject and type**

Sensor type HPC010*******Z*****; Sensor type HPC015*******Z*****;
Sensor type HPC020*******Z*****

Instead of the *** in the complete denomination letters and numerals will be inserted which characterize the following variations:

H P C 0 1 0 * * * * * * * Z * * * * * * *
H P C 0 1 5 * * * * * * * Z * * * * * * *
H P C 0 2 0 * * * * * * * Z * * * * * * *

Other Electronic Interface
(Use only when Electronic Interface = Z)
UA = 4200 Integral Mount Transmitter

Marking without influence to type of protection

Letter for conduit connections

Letter for electronic interface
2 = Aluminium enhanced core processor
3 = Stainless enhanced core processor
4 = Aluminum enhanced core processor with extender
5 = Stainless enhanced core processor with extender
6 = Aluminum enhanced core processor for direct host
7 = Stainless enhanced core processor for direct host
8 = Aluminum enhanced core processor with extender for direct host
9 = Stainless enhanced core processor with extender for direct host
R = With junction box for 9-wire
H = 9 wire junction box with extender
S = 9-wire Stainless junction box
T = 9-wire Stainless junction box with extender
F = Integral 5700
J = Integral 2200S
U = Integral 2200S with extender
Z = Requires additional selection from "other electronic interface"
D = Rupture Disk (vent)

Marking without influence to type of protection

For HPC010:

P = Nickel Alloy N06022

For HPC015 / HPC020:
P = Stainless Steel 15374 psi
H = Nickel Alloy C22 15374 psi
M = Stainless Steel 6991psi
N = Stainless Steel 13960psi

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Marking:

CE 2460 Ex **II 2G**
II 2D

with additional marking required by the standards mentioned in the following tables:

Type	Type of protection	Ambient temperature range
HPC010*****[R,H,S,T]*Z***** HPC015*****[R,H,S,T]*Z***** HPC020*****[R,H,S,T]*Z*****	Ex ib IIC T6…T1 Gb Ex ib IIIC T [1] °C Db IP66/IP67	-40 °C ≤ T_a ≤ +80 °C
HPC010*****[2,3,4,5,6,7,8,9]*Z***** HPC015*****[2,3,4,5,6,7,8,9]*Z***** HPC020*****[2,3,4,5,6,7,8,9]*Z*****	Ex ib IIC T5…T1 Gb Ex ib IIIC T [1] °C Db IP66/IP67	-40 °C ≤ T_a ≤ +60 °C
HPC010*****[J,U]*Z***** HPC015*****[J,U]*Z***** HPC020*****[J,U]*Z*****	See section 17.1	-40 °C ≤ T_a ≤ +60 °C
HPC010*****F*Z***** HPC015*****F*Z***** HPC020*****F*Z*****	See section 17.2	-40 °C ≤ T_a ≤ +65 °C
HPC015*****Z*Z*****UA HPC020*****Z*Z*****UA	See section 17.3	-40 °C ≤ T_a ≤ +65 °C

[1] Maximum surface temperature T for dust, see temperature graphs and manufacturer's instructions. Dust only with stainless steel type label.

15.2 Description

The flow sensor in combination with a transmitter is used for flow measurement.
The flow sensor, which consists of magnetically excited oscillating tubes, contains as electrical components coils, resistors, temperature sensors, terminals and connectors.

When used with an integral junction box (BVS 09 ATEX E 071 U), the variation gets the denomination type HPC010/HPC015/HPC020***** [S,T] *Z***** for a SS enclosure and HPC010/HPC015/HPC020***** [R,H] *Z***** for an aluminium enclosure.

When used with an integral mounted enhanced signal processing device type 800 (BVS 05 ATEX E 111 U), the variation gets the denomination type HPC010/HPC015/HPC020*****[3, 5, 7 or 9]*Z***** for a SS enclosure and HPC010/HPC015/HPC020*****[2, 4, 6 or 8]*Z***** for an aluminum enclosure.

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When used with an integral transmitter type 2200S********* (BVS 08 ATEX E 099 X), the variation gets the denomination type HPC010/HPC015/HPC020***** [J,U] *Z*****.

When used with an integral transmitter type 5700*1******** (BVS 14 ATEX E 132 X), the variation gets the denomination type HPC010/HPC015/HPC020***** F*Z*****.

When used with an integral transmitter type 4200*1******** (SIRA 19ATEX2008X), the variation gets the denomination type HPC010/HPC015/HPC020*****Z*Z*****UA.

Reason for this issue

Addition of a new HPC Sensor type HPC020*******Z*****
The transmitter type 4200 can be connected with the HPC sensor

15.3 **Parameters**

15.3.1 Type HPC010*****[R, H, S or T]*Z***** or HPC015*****[R, H, S or T]*Z***** or HPC020*****[R, H, S or T]*Z***** with J-box

15.3.1.1 Drive circuit (connections 1 – 2 or wires red and brown)

Voltage	U_i	DC	10.5	V
Current (instantaneous)	I_i		2.45	A
Current (steady state)	I_i		0.272	A
Power	P_i		2.54	W
Effective internal capacitance	C_i		Negligible	
Effective internal inductance	L_i		Per following table:	

Sensor type		Inductance (mH)	Coil Resistance (Ω)	Series Resistor (Ω)	Minimum Fluid Temp (°C)
HPC010*****[R,H,S,T]*Z*****	(IIC)	0.22	12.17	118.63	-50

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HPC015*****[R,H,S,T]*Z***** HPC020*****[R,H,S,T]*Z*****					

15.3.1.2 Pick-off circuit (pin connections 5/9 and 6/8, wires green/white & blue/gray)

Voltage	U_i	DC	21.13	V
Current	I_i		18.05	mA
Power	P_i		45	mW
Effective internal capacitance	C_i		Negligible	
Effective internal inductance	L_i		Per following table:	

Sensor type		Inductance (mH)	Coil Resistance (Ω)	Series Resistor (Ω)	Minimum Fluid Temp (°C)
HPC010*****[R,H,S,T]*Z***** HPC015*****[R,H,S,T]*Z***** HPC020*****[R,H,S,T]*Z*****	(IIC)	4.16	115.39	569.20	-50

15.3.1.3 Temperature circuit (pin connections 3, 4 and 7, wires orange, yellow and violet)

Voltage	U_i	DC	21.13	V
Current	I_i		26	mA
Power	P_i		112	mW
Effective internal capacitance	C_i		Negligible	
Effective internal inductance	L_i		Negligible	

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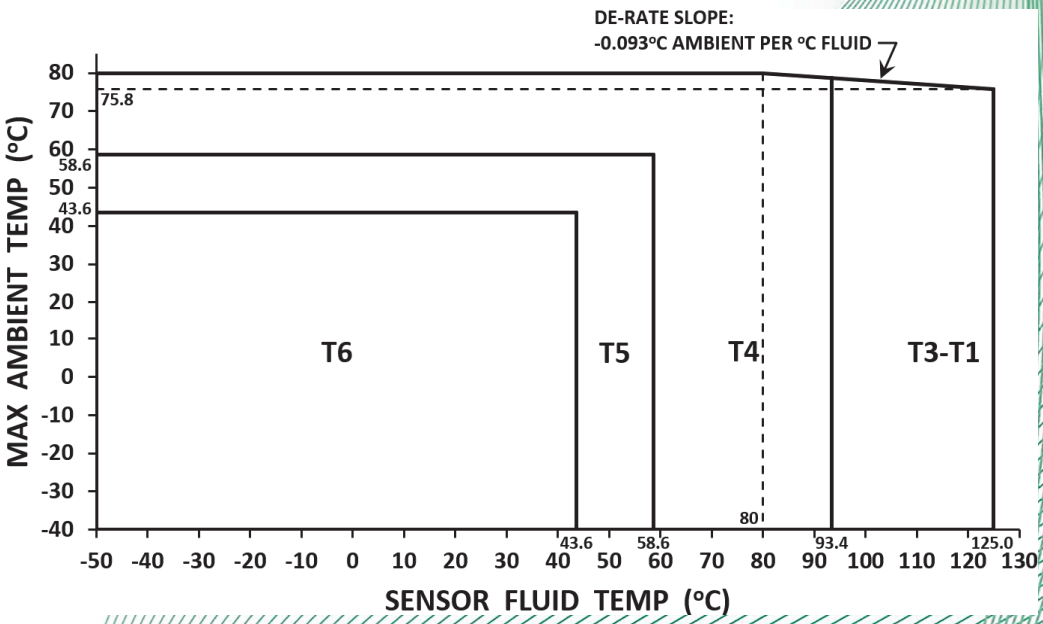
15.3.1.4 Temperature class/maximum surface temperature T

The classification into a temperature class/determination of the maximum surface temperature T depends on the temperature of the medium taking into account the maximum operating temperature of the sensor and is shown in the following graphs:

HPC with J-box

Sensor type		
With J-box	HPC010*****[R,H,S,T]*Z***** HPC015*****[R,H,S,T]*Z***** HPC020*****[R,H,S,T]*Z*****	(IIC)



Note 1: Use the above graph to determine the temperature class for a given fluid and ambient temperature.

Note 2: The maximum surface temperature *T* for dust is as follows: *T6*: *T* 80 °C, *T5*: *T* 95 °C, *T4*: *T* 130 °C, *T3...T1*: *T* 163.7 °C

Ambient temperature range: T_a –40 °C to +80 °C

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15.3.2 Type HPC010*****[2,3,4,5,6,7,8,9]*Z***** or HPC015*****[2,3,4,5,6,7,8,9]*Z***** or HPC020*****[2,3,4,5,6,7,8,9]*Z***** with integral core processor type 800

15.3.2.1 Input circuits (terminals 1-4)

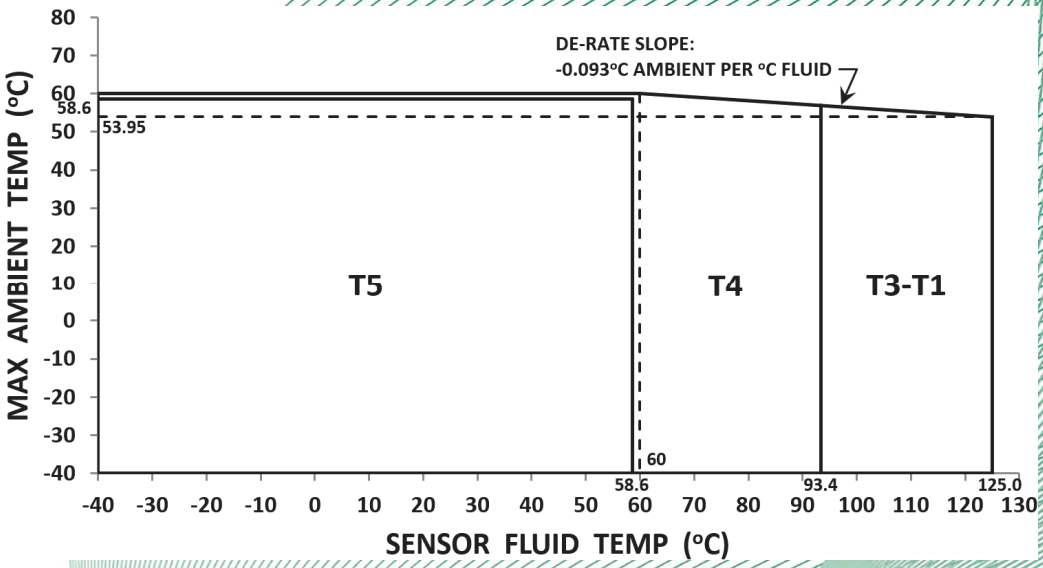
Voltage	U_i	DC	17,3	V
Current	I_i		484	mA
Power	P_i		2,1	W
Effective internal capacitance	C_i		2200	pF
Effective internal inductance	L_i		30	µH

15.3.2.2 Temperature class/maximum surface temperature T

The classification into a temperature class/determination of the maximum surface temperature T depends on the temperature of the medium taking into account the maximum operating temperature of the sensor and is shown in the following graphs:

HPC with integral core processor type 800

Sensor type		
With integral core	HPC010*****[2,3,4,5,6,7,8,9]*Z***** HPC015*****[2,3,4,5,6,7,8,9]*Z***** HPC020*****[2,3,4,5,6,7,8,9]*Z*****	(IIC)



Note 1: Use the above graph to determine the temperature class for a given fluid and ambient temperature.

Note 2: The maximum surface temperature T for dust is as follows: T5: T 95 °C, T4: T 130 °C, T3…T1: T 163.7 °C

Ambient temperature range: T_a –40 °C to +60 °C

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15.3.3 Type HPC010*****[J or U]*Z***** or HPC015*****[J or U]*Z***** or HPC020*****[J or U]*Z***** with 2200S transmitter

15.3.3.1 Input circuits (terminals 1-2)

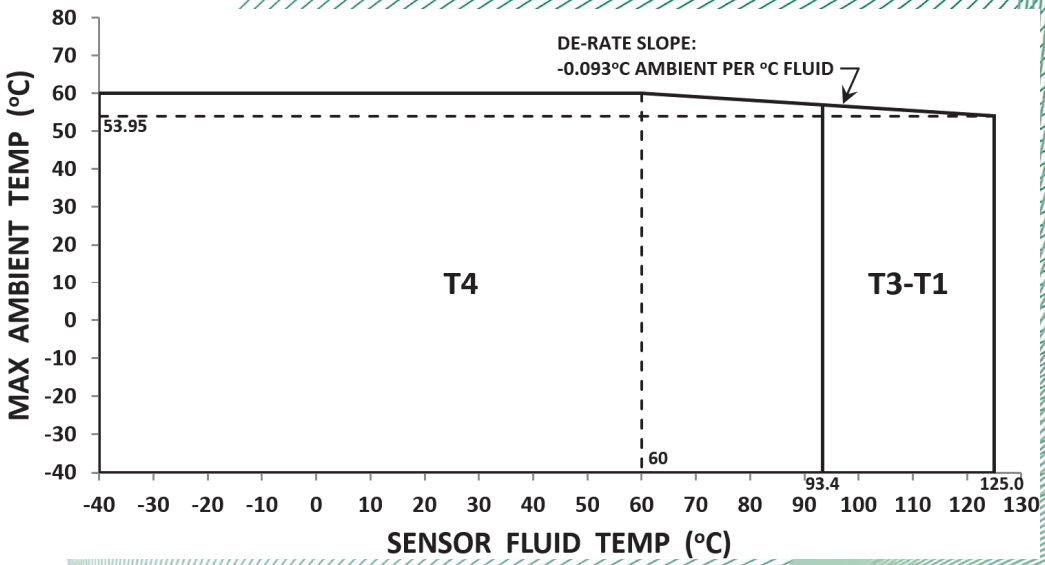
Voltage	U_i	DC	28	V
Current	I_i		120	mA
Power	P_i		0.84	W
Effective internal capacitance	C_i		2200	pF
Effective internal inductance	L_i		45	µH

15.3.3.2 Temperature class/maximum surface temperature T

The classification into a temperature class/determination of the maximum surface temperature T depends on the temperature of the medium taking into account the maximum operating temperature of the sensor and is shown in the following graphs:

HPC with integral 2200S:

Sensor type		
With integral 2200S	HPC010*****[J,U]*Z***** HPC015*****[J,U]*Z***** HPC020*****[J,U]*Z*****	(IIC)



Note 1: Use the above graph to determine the temperature class for a given fluid and ambient temperature.

Note 2: The maximum surface temperature for dust is as follows: T4: T 130 °C, T3…T1: T 163.7 °C.

Ambient temperature range: T_a –40 °C to + 60 °C

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15.3.4 Type HPC010*****F*Z***** or HPC015*****F*Z***** or HPC020*****F*Z***** with integral 5700 transmitter

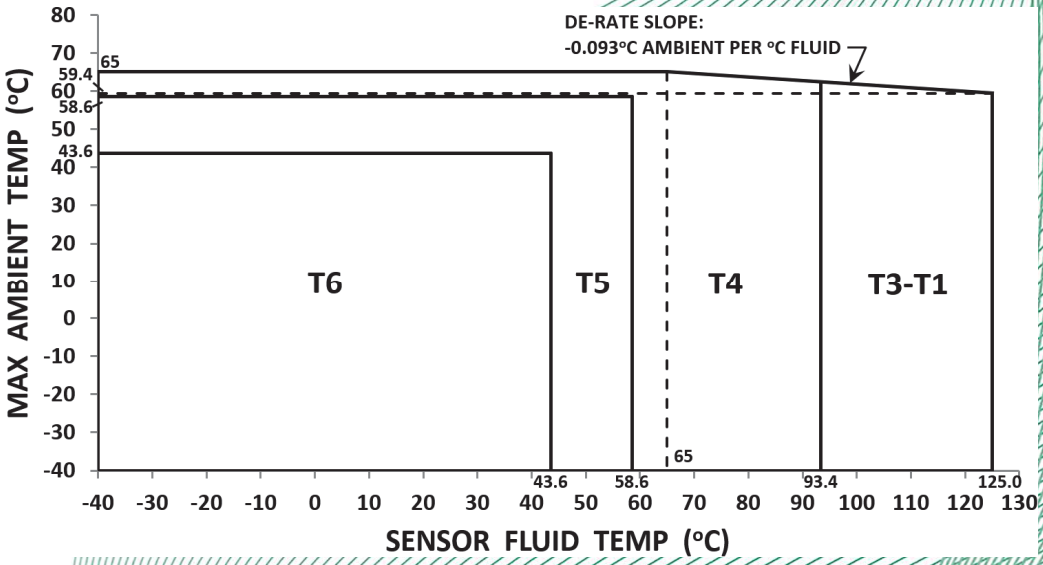
15.3.4.1 Electrical parameters see BVS 14 ATEX E132 X for the transmitter type 5700**********

15.3.4.2 Temperature class/maximum surface temperature T

The classification into a temperature class/determination of the maximum surface temperature T depends on the temperature of the medium taking into account the maximum operating temperature of the sensor and is shown in the following graphs:

HPC with integral 5700

Sensor type		
With integral 5700	HPC010*****F*Z***** HPC015*****F*Z***** HPC020*****F*Z*****	(IIC)



Note 1: Use the above graph to determine the temperature class for a given fluid and ambient temperature.

Note 2: The maximum surface temperature for dust is as follows: T6: T 80 °C, T5: T 95 °C, T4: T 130 °C, T3...T1: T 163.7 °C.

Ambient temperature range: T_a –40 °C to + 65 °C

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15.3.5 Type HPC015*****Z*Z*****UA or HPC020*****Z*Z*****UA with integral 4200 transmitter

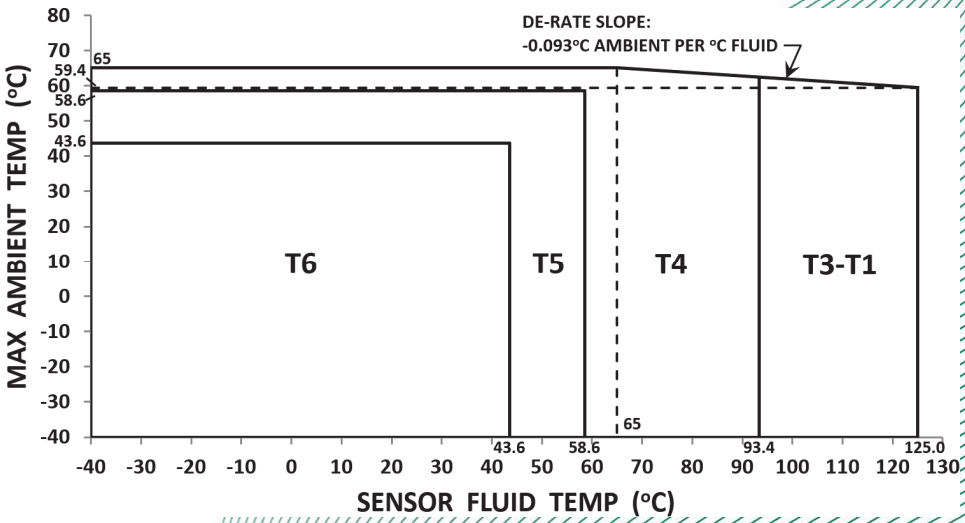
15.3.5.1 Electrical parameters see SIRA 19ATEX2008X for the transmitter type 4200**********

15.3.5.2 Temperature class / maximum surface temperature T

The classification into a temperature class / determination of the maximum surface temperature T depends on the temperature of the medium taking into account the maximum operating temperature of the sensor and is shown in the following graphs:

HPC with integral 4200

Sensor type		
With 4200	HPC015*****Z*Z*****UA HPC020*****Z*Z*****UA	(IIC)



Note 1: Use the above graph to determine the temperature class for a given fluid and ambient temperature.

Note 2: The maximum surface temperature for dust is as follows: T6: T 80 °C, T5: T 95 °C, T4: T 130 °C, T3...T1: T 163.7°C.

Ambient temperature range: T_a -40 °C to +65 °C

16 **Report Number**

BVS PP 16.2216 EU, as of 2023-09-06

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17 Specific Conditions of Use

17.1 By mounting the sensor type HPC010 *****[J or U]*Z***** or HPC015 *****[J or U]*Z***** or HPC020 *****[J or U]*Z***** directly to the transmitter 22**S********** the use of the unit will be modified according to the following:

	HPC010 *****[J,U]*Z***** HPC015 *****[J,U]*Z***** HPC020 *****[J,U]*Z*****
Transmitter type 2200S*[H or K]*1******	Ex ib IIC T4...T1 Ex ibD 21 T [1] °C
Transmitter type 2200S*[5 or 6]*1******	Ex ib IIC T4…T1

[1] Maximum surface temperature T for dust see temperature graphs and manufacturer's instruction.

17.2 By mounting the sensor type HPC010*****F*Z***** or HPC015*****F*Z***** or HPC020*****F*Z***** directly to the transmitter 5700 the use of the unit will be modified according to the following:

	HPC010*****F*Z***** HPC015*****F*Z***** HPC020*****F*Z*****
Transmitter type 5700I12[A,C,N]*FA***	Ex db [ib] IIB + H_2 T6…T1 Gb Ex tb [ib] IIIC T[1]°C Db IP66/IP67
Transmitter type 5700I1[3,5][A,C,N]*FA***	Ex db [ib] IIC T6…T1 Gb Ex tb [ib] IIIC T[1]°C Db IP66/IP67
Transmitter type 5700I12[A,N]*ZA***	Ex db eb [ib] IIB + H_2 T6…T1 Gb Ex tb [ib] IIIC T[1]°C Db IP66/IP67
Transmitter type 5700I1[3,5][A,N]*ZA***	Ex db eb [ib] IIC T6…T1 Gb Ex tb [ib] IIIC T[1]°C Db IP66/IP67
Transmitter type 5700I12E*FA***	Ex db [ia Ga] [ib] IIB + H_2 T6…T1 Gb Ex tb [ia Da] [ib] IIIC T[1]°C Db IP66/IP67
Transmitter type 5700I1[3,5]E*FA***	Ex db [ia Ga] [ib] IIC T6…T1 Gb Ex tb [ia Da] [ib] IIIC T[1]°C Db IP66/IP67
Transmitter type 5700I12E*ZA***	Ex db eb [ia Ga] [ib] IIB + H_2 T6…T1 Gb Ex tb [ia Da] [ib] IIIC T[1]°C Db IP66/IP67
Transmitter type 5700I1[3,5]E*ZA***	Ex db eb [ia Ga] [ib] IIC T6…T1 Gb Ex tb [ia Da] [ib] IIIC T[1]°C Db IP66/IP67

[1] Maximum surface temperature T for dust see temperature graphs and manufacturer's instruction.

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17.3 By mounting the sensor type HPC015*****Z*I*****UA or HPC020*****Z*I*****UA directly to the transmitter 4200 the use of the unit will be modified according to the following:

	HPC015*****Z*Z*****UA HPC020*****Z*Z*****UA
Transmitter type 4200I1[2,3]A*FA*****	Ex db [ib] IIC T6…T1 Gb Ex tb [ib] IIIC T[1)]°C Db IP66/IP67
Transmitter type 4200I1[2,3]A*ZA*****	Ex db eb [ib] IIC T6...T1 Gb Ex tb [ib] IIIC T[1)]°C Db IP66/IP67
Transmitter type 4200I1[2,3]A*ZB*****	Ex ib IIC T4...T1 Gb Ex ib IIIC T[1)]°C Db IP66/IP67
Transmitter type 4200I1[2,3]A*ZB***** (NI,PI)	Ex ib IIC T4...T1 Gb

1) Maximum surface temperature T for dust see temperature graphs and manufacturer's instruction. Dust only with stainless steel type label.

18 Essential Health and Safety Requirements

Met by compliance with the requirements mentioned in item 9.

19 Remarks and additional information

Drawings and documents are listed in the confidential report.

We confirm the correctness of the translation from the German original.
In the case of arbitration only the German wording shall be valid and binding.

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Bochum, 2023-09-06
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Managing Director

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