



Translation

# EU-Type Examination Certificate

Equipment intended for use in potentially explosive atmospheres  
Directive 2014/34/EU

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

Product: **Sensor type HPC010P\*\*\*\*\*Z\*\*\*\*\***

Manufacturer: **Micro Motion Inc.**

Address: **7070 Winchester Circle, Boulder, Co. 80301, USA**

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

DEKRA EXAM 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.


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

**EN 60079-0:2012 + A11:2013 General requirements**  
**EN 60079-11:2012 Intrinsic Safety "i"**

If the sign "X" is placed after the certificate number, it indicates that the product is subject to the Special Conditions for Use specified in the appendix to this certificate.

This EU-Type Examination Certificate relates only to the design and construction of the specified product. Further requirements of the Directive apply to the manufacturing process and supply of this product. These are not covered by this certificate.

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 EXAM GmbH  
Bochum, 2016-12-14

Signed: Dr. Franz Eickhoff

Certifier

Signed: Dr. Michael Wittler

Approver



13 **Appendix**

14 **EU-Type Examination Certificate  
BVS 16 ATEX E 133 X**

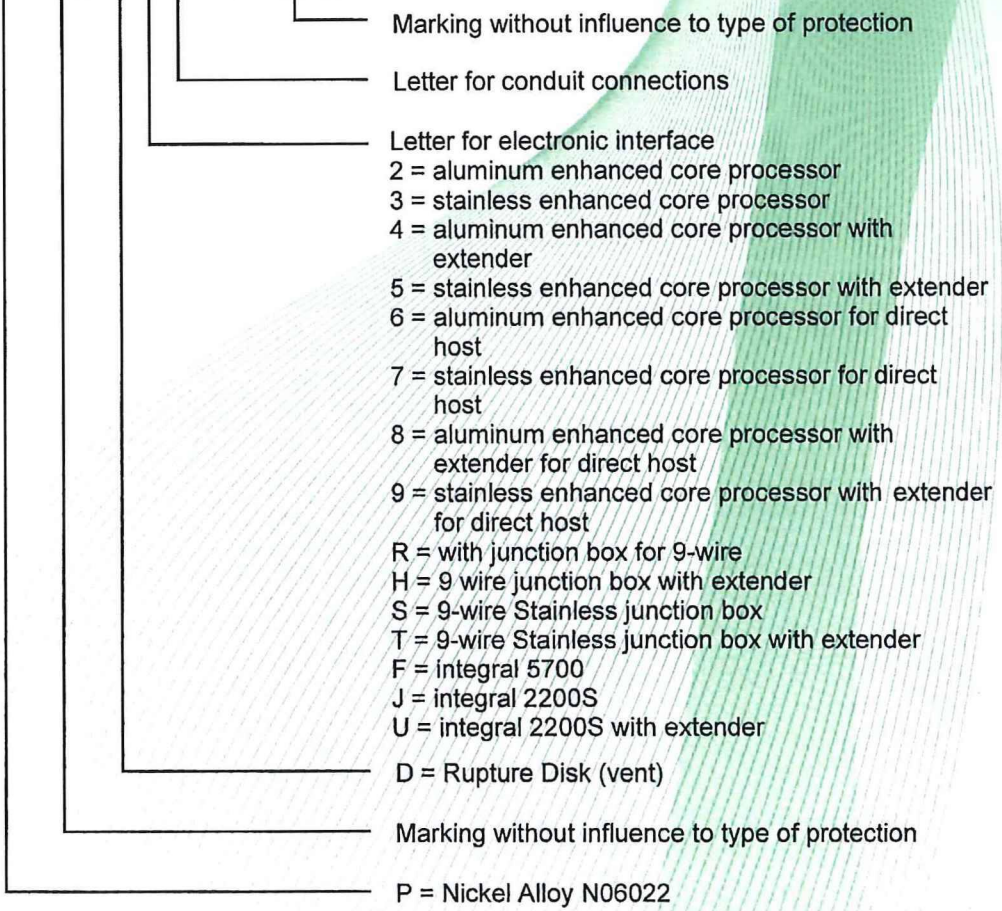
15 **Product description**

15.1 **Subject and type**

Sensor type HPC010\*\*\*\*\*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 \* \* \* \* \*



**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*****	Ex ib IIC T6...T1 Gb Ex ib IIIC T <sup>1)</sup> °C Db IP66/IP67	- 40 °C ≤ Ta ≤ +80 °C
HPC010*****[2,3,4,5,6,7,8,9]*Z*****	Ex ib IIC T5...T1 Gb Ex ib IIIC T <sup>1)</sup> °C Db IP66/IP67	- 40 °C ≤ Ta ≤ +60 °C
HPC010*****[J,U]*Z*****	See section 17.1	- 40 °C ≤ Ta ≤ +60 °C
HPC010*****[F]*Z*****	See section 17.2	- 40 °C ≤ Ta ≤ +65 °C

<sup>1)</sup> Maximum surface temperature T for dust, see temperature graphs and manufacturer's instructions.

## 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 and terminals and connectors.

When used with an integral junction box (BVS 09 ATEX E 071 U), the variation gets the denomination type HPC010 \*\*\*\*\*[S,T]\*Z\*\*\*\*\* for an SS enclosure and HPC010 \*\*\*\*\*[R,H]\*Z\*\*\*\*\* for an aluminum 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\*\*\*\*\*[3, 5, 7 or 9]\*Z\*\*\*\*\* for an SS enclosure and HPC010\*\*\*\*\*[2, 4, 6 or 8]\*Z\*\*\*\*\* for an aluminum enclosure.



When used with an integral transmitter type 2200S\*\*\*\*\* (BVS 08 ATEX E 099 X), the variation gets the denomination type HPC010 \*\*\*\*\*[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 \*\*\*\*\* F \*Z\*\*\*\*\*



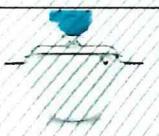
Modifications to the design which have impact on the electrical parameters are indicated by a Construction Identification Code (CIC). This code consists out of two digits, starting with an A and followed by a sequence number, for example A4. The CIC can be found on the approval label

### 15.3 Parameters

#### 15.3.1 Type HPC010\*\*\*\*\*[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 ( $\Omega$ )	Series Resistor ( $\Omega$ )	Minimum Fluid Temp ( $^{\circ}\text{C}$ )
HPC010*****[R,H,S,T]*Z*****	(IIC)	0.22	12.17	118.63	-50 $^{\circ}\text{C}$

##### 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 ( $\Omega$ )	Series Resistor ( $\Omega$ )	Minimum Fluid Temp ( $^{\circ}\text{C}$ )
HPC010*****[R,H,S,T]*Z*****	(IIC)	4.16	115.39	569.20	-50 $^{\circ}\text{C}$


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

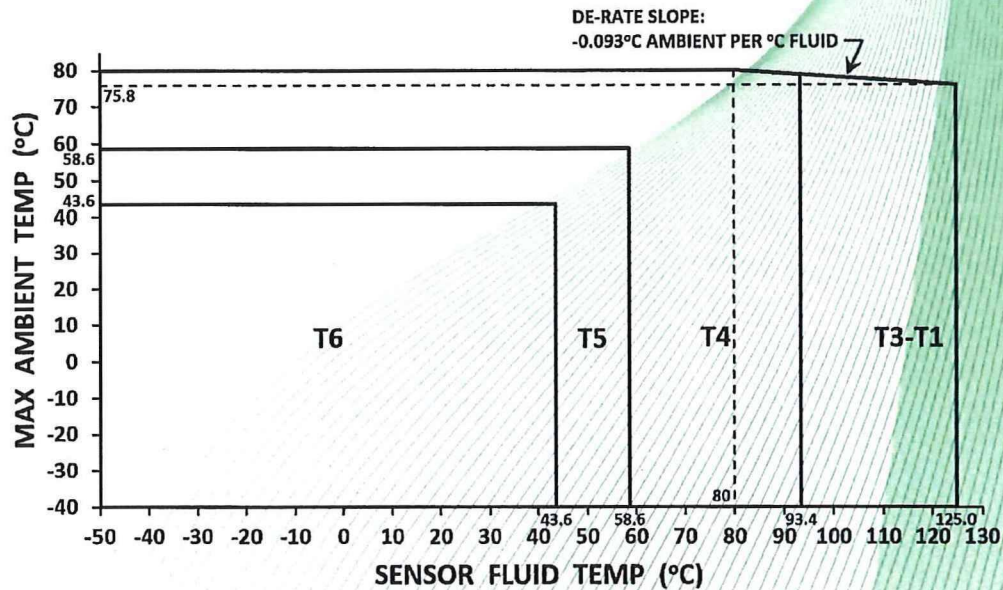
Voltage	$U_i$	DC	21.13	V
Current	$I_i$		26	mA
Power	$P_i$		112	mW
Effective internal capacitance	$C_i$		Negligible	
Effective internal inductance	$L_i$		Negligible	

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:

HPC010 with J-box

Sensor type		
With J-box	HPC010*****[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

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


15.3.2.1 Input circuits (terminals 1-4)

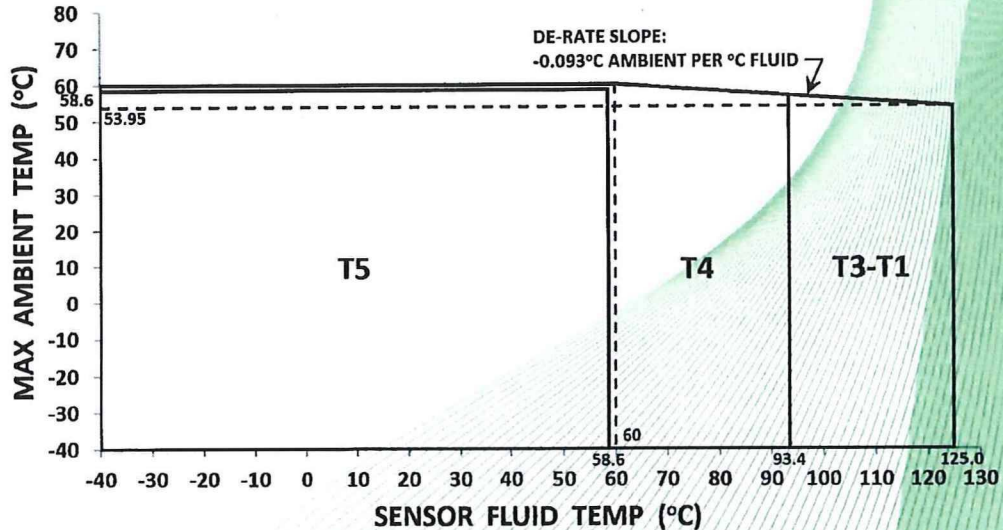
Voltage	$U_i$	DC	17,3	V
Current	$I_i$		484	mA
Power	$P_i$		2,1	W
Effective internal capacitance	$C_i$		2200	pF
Effective internal inductance	$L_i$		30	μH

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:

HPC010 with integral core processor type 800

Sensor type		
With integral core	HPC010*****[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

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


15.3.3.1 Input circuits (terminals 1-2)

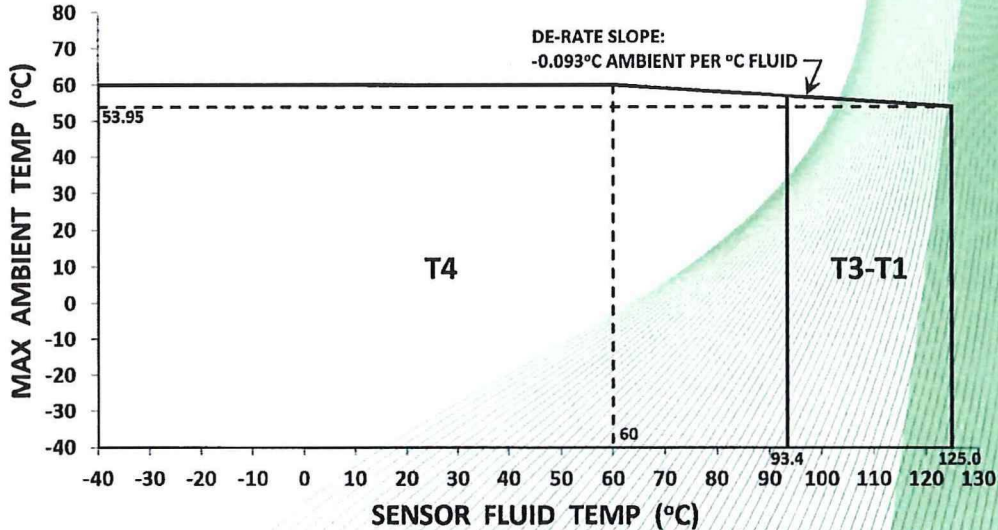
Voltage	$U_i$	DC	28	V
Current	$I_i$		120	mA
Power	$P_i$		0.84	W
Effective internal capacitance	$C_i$		2200	pF
Effective internal inductance	$L_i$		45	$\mu$ H

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:

HPC010 with integral 2200S:

Sensor type		
With 2200	HPC010*****[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.

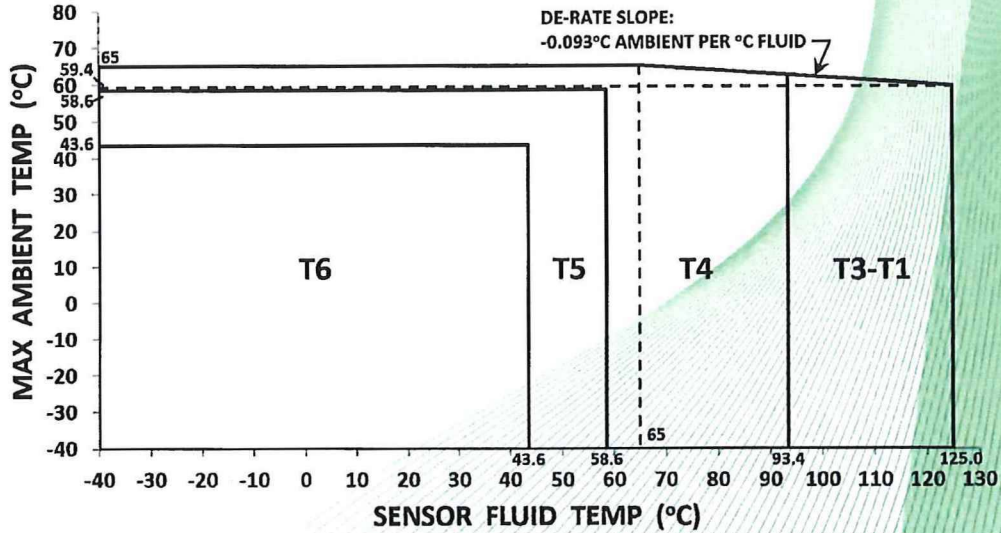
Ambient temperature range: Ta -40 °C to + 60 °C

- 15.3.4 Type HPC010\*\*\*\*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:

HPC010 with integral 5700

Sensor type		
With 5700	HPC010*****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: Ta -40 °C to + 65 °C

16 Report Number

BVS PP 16.2216 EU, as of 2016-12-14

17 Special Conditions for Use

17.1 By mounting the sensor type HPC010 \*\*\*\*\*[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*****
Transmitter type 2200S*[H or K]*1*****	Ex ib IIC T4...T1 Ex ibD 21 T <sup>1)</sup> °C
Transmitter type 2200S*[5 or 6]*1*****	Ex ib IIC T4...T1

<sup>1)</sup> Maximum surface temperature T for dust for types HPC010 \*\*\*\*\*[J,U]\*Z\*\*\*\*\* see temperature graphs and manufacturer's instruction.





17.2 By mounting the sensor type HPC010 directly to the transmitter 5700 the use of the unit will be modified according to the following:

	HPC010****F*Z****
Transmitter type 5700I12[A,C,N]*FA***	Ex db [ib] IIB + H <sub>2</sub> T6...T1 Gb Ex tb IIIC T <sup>1</sup> °C Db IP66/IP67
Transmitter type 5700I1[3,5][A,C,N]*FA***	Ex db [ib] IIC T6...T1 Gb Ex tb IIIC T <sup>1</sup> °C Db IP66/IP67
Transmitter type 5700I12[A,N]*ZA***	Ex db e [ib] IIB + H <sub>2</sub> T6...T1 Gb Ex tb [ib] IIIC T <sup>1</sup> °C Db IP66/IP67
Transmitter type 5700I1[3,5][A,N]*ZA***	Ex db e [ib] IIC T6...T1 Gb Ex tb [ib] IIIC T <sup>1</sup> °C Db IP66/IP67
Transmitter type 5700I12E*FA***	Ex db [ia Ga] [ib] IIB + H <sub>2</sub> T6...T1 Gb Ex tb [ia Da] [ib] IIIC T <sup>1</sup> °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 <sup>1</sup> °C Db IP66/IP67
Transmitter type 5700I12E*ZA***	Ex db e [ia Ga] [ib] IIB + H <sub>2</sub> T6...T1 Gb Ex tb [ia Da] [ib] IIIC T <sup>1</sup> °C Db IP66/IP67
Transmitter type 5700I1[3,5]E*ZA***	Ex db e [ia Ga] [ib] IIC T6...T1 Gb Ex tb [ia Da] [ib] IIIC T <sup>1</sup> °C Db IP66/IP67

<sup>1)</sup> Maximum surface temperature T for dust for types HPC010\*\*\*\*F\*Z\*\*\*\* see temperature graphs and manufacturer's instruction.

18 **Essential Health and Safety Requirements**

The Essential Health and Safety Requirements are covered by the standards listed under item 9.

19 **Drawings and Documents**

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.

DEKRA EXAM GmbH  
Bochum, dated 2016-12-14  
BVS-Ben/Schu/Nu A 20160363

Certifier

Approver