Translation

1 # EU-Type Examination Certificate Supplement 1

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

3 EU-Type Examination Certificate Number: **BVS 17 ATEX E 074**

4 Product: **Sensor type RHM***

5 Manufacturer: **Rheonik GmbH**

6 Address: **Rudolf-Diesel-Straße 5, 85235 Odelzhausen, Germany**

7 This supplementary certificate extends EU-Type Examination Certificate No. BVS 17 ATEX E 074 to apply to products designed and constructed in accordance with the specification set out in the appendix of the said certificate but having any acceptable variations specified in the appendix to this certificate and the documents referred to therein.

8 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. PP 17.2125 EU.

9 The Essential Health and Safety Requirements are assured in consideration of:

EN 60079-0:2012 + A11:2013	**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 Special Conditions for Use specified in the appendix to this certificate.

11 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.

12 The marking of the product shall include the following:

II 1G Ex ia IIC T6...T1 Ga or
II 2G Ex ib IIC T6...T1 Gb or
II 1G Ex ia IIB T6...T1 Ga or
II 2G Ex ib IIB T6...T1 Gb

for details see paragraph 15.1

DEKRA EXAM GmbH
Bochum, 2018-02-08

Signed: Dr. Franz Eickhoff
Certifier

Signed: Dr. Michael Wittler
Approver

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13 **Appendix**

14 **EU-Type Examination Certificate**

BVS 17 ATEX E 074
Supplement 1

15 **Product description**

15.1 **Subject and type**

Sensor type: MaaaTTPPCCCMMFFCC-OO-EE

with

Maaa Meter type
M#5L = RHM015
M03L = RHM03
M04L = RHM04
M06L = RHM06
M08L = RHM08
M12L = RHM12
M15L = RHM15
M20L = RHM20
M30L = RHM30
M40L = RHM40
M60L = RHM60
M80L = RHM80
M100 = RHM100
M160 = RHM160

TT Medium Temperature range
N1 = -20 °C to +120 °C
NA = -50 °C to +120 °C
N* = special temperature ranges between -50 °C and +120 °C
E2 = -50 °C to +210 °C
E3 = -196 °C to +50 °C
E* = special temperature ranges between -196 °C and +210 °C
H4 = -20 °C to +350 °C
H5 = -20 °C to +400 °C
H* = special temperature ranges between -20 °C and +400 °C

PPCCCMMFF Marking (Mechanical features: pressure range, mechanical construction, material, process connection) without influence to type of protection

CC Connection type and electrical properties
JC = aluminium connection box, Pt100, only Zone 1
JM = aluminium connection box, 2 Pt1000, only Zone 1
SC = stainless steel connection box, 2 Pt100
SM = stainless steel connection box, 2 Pt1000
M2 = connector M23, 2 Pt1000 (temperature N*, only RHM015 to RHM20)
M3 = connector M23 on aluminium connection box, 2 Pt1000, only Zone 1
MI = connector M23, 2 Pt1000 (temperature N*)
T* = fixed cable up to 10 m, only Zone 1

OO 01 to ZZ: Marking without influence to type of protection

EE Hazardous areas approvals
A0 = Zone 0 (only for Version with stainless steel connection box (S*) or connector M23 (M2 und MI))
Marked: II 1G Ex ia IIC T6…T1 Ga
A1 = Zone 1
Marked: II 2G Ex ib IIC T6…T1 Gb

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AB = Zone 0 (only for Version with stainless steel connection box (S*) or connector M23 (M2 und MI))
Marked: II 1G Ex ia IIB T6...T1 Ga
AB = Zone 1
Marked: II 2G Ex ib IIB T6...T1 Gb
AL = Zone 1 (reduced drive power)
Marked: II 2G Ex ib IIC T6...T1 Gb

Note: Not all combinations are possible. For available combinations see instructions.

15.2 Description

The Coriolis mass flow meter RHM* in combination with a separate certified transmitter is used for flow measurement (fluid / gas). The flow meter contains oscillating tubes, coils, temperature sensors, diodes and either a connection box with terminals or a fixed cable (maximum cable length 10 m) or a M23 connector.

Reason for this supplement

The mechanical and electrical design was partly modified.
Additionally Group IIB for some types.

15.3 Parameters

The drive circuit shall be connected to a linear source with C_i and L_i negligible.

15.3.1 Version AL (reduced drive power)

15.3.1.1 Drive circuit (wire brown - blue or terminals 1 - 2)

Maximum input voltage	U_i	DC	7.2	V
Maximum input current	I_i		88.6	mA
Maximum input power	P_i		159	mW
Maximum internal capacitance	C_i		10	nF
Maximum internal inductance	L_i		4.5	mH

15.3.1.2 Pickup circuit (wire yellow - green and grey - white or terminals 6 – 7 and 8 - 9)

Maximum input voltage	U_i	DC	7.4	V
Maximum input current	I_i		29	mA
Maximum input power	P_i		54	mW
Maximum internal capacitance	C_i		10	nF
Maximum internal inductance	L_i		4.5	mH

15.3.1.3 Temperature circuit (wire red – pink and orange – pink or terminals 3 - 4 and 5 – 4)

Maximum input voltage	U_i	DC	7.4	V
Maximum input current	I_i		58	mA
Maximum input Power	P_i		107	mW
Maximum internal capacitance	C_i		10	nF
Maximum internal inductance	L_i		0.1	mH

15.3.2 Version A0, A1

15.3.2.1 Drive circuit (wire brown - blue or terminals 1 - 2 or M23 connector pin 10 - 11)

Maximum input voltage	U_i	DC	9.3	V
Maximum input current	I_i		144	mA
Maximum input power	P_i		335	mW
Maximum internal capacitance	C_i		10	nF
Maximum internal inductance	L_i		1.5	mH

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15.3.2.2 Pickup circuit (wire yellow - green and grey - white or terminals 6 – 7 and 8 – 9 or M23 connector pin 2 – 3 and pin 6 - 7)

Maximum input voltage	U_i	DC	7.4	V
Maximum input current	I_i		29	mA
Maximum input power	P_i		54	mW
Maximum internal capacitance	C_i		10	nF
Maximum internal inductance	L_i		4.5	mH

15.3.2.3 Temperature circuit (wire red – pink and orange – pink or terminals 3 - 4 and 5 – 4 or M23 connector pin 1 – 9 and pin 8 - 9)

Maximum input voltage	U_i	DC	7.4	V
Maximum input current	I_i		58	mA
Maximum input power	P_i		107	mW
Maximum internal capacitance	C_i		10	nF
Maximum internal inductance	L_i		0.1	mH

15.3.3 Version AB

15.3.3.1 Drive circuit (wire brown - blue or terminals 1 – 2 or M23 connector pin 10 - 11)

Maximum input voltage	U_i	DC	9.3	V
Maximum input current	I_i		140	mA
Maximum input power	P_i		326	mW
Maximum internal capacitance	C_i		10	nF
Maximum internal inductance	L_i		7.2	mH

15.3.3.2 Pickup circuit (wire yellow - green and grey - white or terminals 6 – 7 and 8 – 9 or M23 connector pin 2 – 3 and pin 6 - 7)

Maximum input voltage	U_i	DC	7.4	V
Maximum input current	I_i		29	mA
Maximum input power	P_i		54	mW
Maximum internal capacitance	C_i		10	nF
Maximum internal inductance	L_i		4.5	mH

15.3.3.3 Temperature circuit (wire red – pink and orange – pink or terminals 3 - 4 and 5 – 4 or M23 connector pin 1 – 9 and pin 8 - 9)

Maximum input voltage	U_i	DC	7.4	V
Maximum input current	I_i		58	mA
Maximum input power	P_i		107	mW
Maximum internal capacitance	C_i		10	nF
Maximum internal inductance	L_i		0.1	mH

15.3.4. Temperature class

The classification into a temperature class depends on the temperature of the medium taking into account the maximum operating temperature of the sensor and is shown in the following tables. These values may be restricted by the used materials, see manual.

Temperature Ranges N*

Temperature class	T6	T5	T4	T3	T2	T1
Min. ambient and medium temperature	-50 °C	-50 °C	-50 °C	-50 °C	-50 °C	-50 °C
Max. ambient temperature	65 °C	80 °C	80 °C	80 °C	80 °C	80 °C
Max. medium temperature	65 °C	80 °C	115 °C	120 °C	120 °C	120 °C

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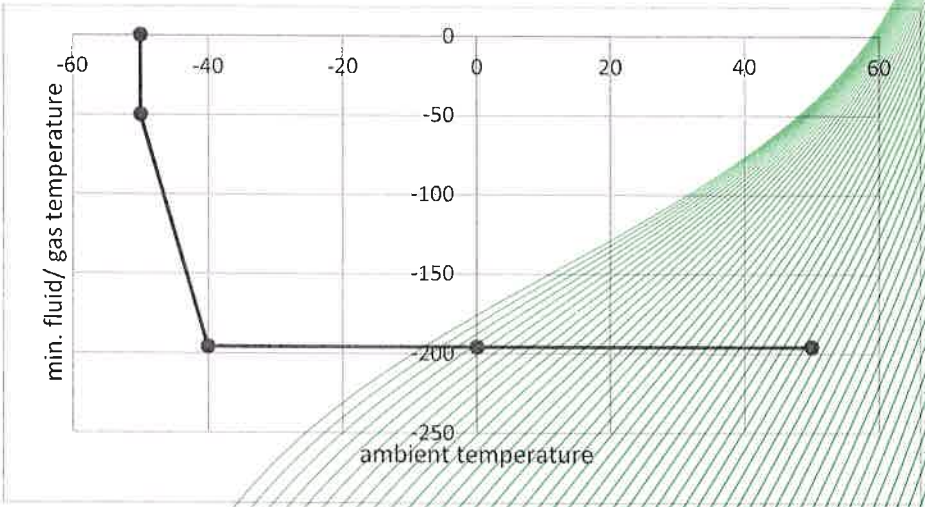
Temperature Ranges E*

Temperature class	T6	T5	T4	T3	T2	T1
Min. ambient temperature	-50 °C*	-50 °C*	-50 °C*	-50 °C*	-50 °C*	-50 °C*
Min. medium temperature	-196 °C*	-196 °C*	-196 °C*	-196 °C*	-196 °C*	-196 °C*
Max. ambient temperature	65 °C	80 °C	80 °C	80 °C	80 °C	80 °C
Max. medium temperature	65 °C	80 °C	115 °C	180 °C	210 °C	210 °C

*) At ambient temperature below -40°C see graph below.



Derating of minimum medium (fluid / gas) temperature for low ambient temperatures.

Temperature Ranges H*

Temperature class	T6	T5	T4	T3	T2	T1
Min. ambient and medium temperature	-	-	-20 °C	-20 °C	-20 °C	-20 °C
Max. ambient temperature	-	-	80 °C	80 °C	80 °C	80 °C
Max. medium temperature	-	-	105 °C	170°C	270 °C	400 °C

16 **Report Number**

BVS PP 17.2125 EU, as of 2018-02-08

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17 **Special Conditions for Use**

None

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 2018-08-21
BVS-Ben/Ar A 2010899

Certifier

Approver

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