Translation

1 # EU-Type Examination Certificate Supplement 2

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

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

4 Product: **Sensor type RHM***

5 Manufacturer: **Rheonik Messtechnik 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 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 17.2125 EU.

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

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 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 Testing and Certification GmbH
Bochum, 2020-09-18

Signed: Jörg-Timm Kilisch

Managing Director

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DEKRA Testing and Certification GmbH, Handwerkstr. 15, 70565 Stuttgart, Germany
Certification body: Dinnendahlstr. 9, 44809 Bochum, Germany
Phone +49.234.3696-400, Fax +49.234.3696-401, e-mail DTC-Certification-body@dekra.com

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13 **Appendix**

14 **EU-Type Examination Certificate**

BVS 17 ATEX E 074
Supplement 2

15 **Product description**

15.1 **Subject and type**

Sensor type: MaaaTTPPCCCMMFFCC-OO-EE

with

Maaa Meter type
M#5* = RHM015
M02* = RHM02
M03* = RHM03
M04* = RHM04
M06* = RHM06
M08* = RHM08
M10* = RHM10
M12* = RHM12
M15* = RHM15
M20* = RHM20
M30* = RHM30
M40* = RHM40
M60* = RHM60
M80* = RHM80
M10n = RHM100
M16n = RHM160
* = F, G, L, S or W, depending on torsion bar type (Not Ex relevant)
n = 0…5, depending on torsion bar type (Not Ex relevant)

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, not Zone 0
JM = aluminium connection box, 2 Pt1000, not Zone 0
SC = stainless steel connection box, 2 Pt100
SM = stainless steel connection box, 2 Pt1000
TM = fixed cable up to 10 m, not Zone 0

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*))
Marked: II 1G Ex ia IIC T6…T1 Ga
A1 = Zone 1
Marked: II 2G Ex ib IIC T6…T1 Gb
AB = Zone 0 (only for Version with stainless steel connection box (S*))
Marked: II 1G Ex ia IIB T6…T1 Ga
AB = Zone 1
Marked: II 2G Ex ib IIB T6…T1 Gb

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

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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).

Reason for the supplement

The equipment has been assessed in accordance with current standard versions.
The mechanical and electrical design was partly modified.
New sensor types RHM02 and RHM10 introduced.
Connection type M* (connector M23) removed.
Connection type T* (fixed cable) changed in TM.
Removing "AL" (reduced drive power) and "AE" (Zone 2) from the list of hazardous area approvals.
Removing separate parameters for "Version AB" (see hazardous area approvals).
A new "Condition of Use" has been introduced.

15.3 Parameters

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

15.3.1 Intrinsically safe circuits

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

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
For Group IIC (Hazardous area approvals code "A0" or "A1")				
Maximum internal inductance	L_i		1.5	mH
For Group IIB (Hazardous area approvals code "AB")				
Maximum internal inductance	L_i		6.7	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	Pi		54	mW
Maximum internal capacitance	Ci		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

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15.3.2 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.

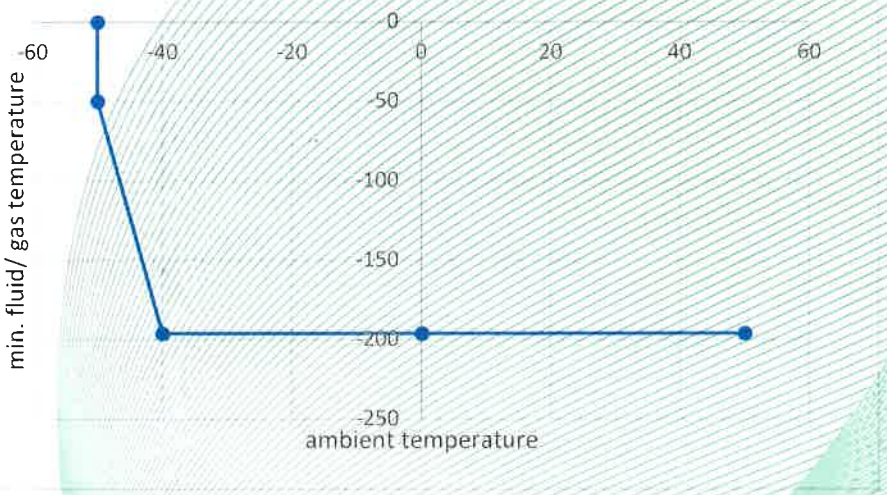
Temperature Ranges N*

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

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

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16 **Report Number**

BVS PP 17.2125 EU, as of 2020-09-18

17 **Special Conditions for Use**

Only for sensors with temperature ranges above 210 °C (temperature code H*) or below -50 °C (e.g. temperature code E3):
Along to the intrinsically safe circuit potential equalization has to be provided because in case of a fault the intrinsically safe circuit has to be regarded as connected to the metal housing.

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 Testing and Certification GmbH
Bochum, 2020-09-18
BVS-Ben/Mu A 20200369

Managing Director

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