



Translation

(1) **EC-Type Examination Certificate**

(2) **- Directive 94/9/EC -**  
**Equipment and protective systems intended for use**  
**in potentially explosive atmospheres**

(3) **BVS 04 ATEX E 020 X**

(4) **Equipment:** Liquid density meter type DIMF\*.\*\*\*\* ...

(5) **Manufacturer:** Bopp & Reuther Messtechnik GmbH

(6) **Address:** D - 67346 Speyer

(7) The design and construction of this equipment and any acceptable variation thereto are specified in the schedule to this type examination certificate.

(8) The certification body of EXAM BBG Prüf- und Zertifizier GmbH, notified body no. 0158 in accordance with Article 9 of the Directive 94/9/EC of the European Parliament and the Council of 23 March 1994, certifies that this equipment 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 atmospheres, given in Annex II to the Directive.

The examination and test results are recorded in the test and assessment report BVS PP 04.2031 EG.

(9) The Essential Health and Safety Requirements are assured by compliance with:

EN 50014:1997+A1-A2	General requirements
EN 50018:2000 +A1	Flameproof enclosure 'd'
EN 50020:2002	Intrinsic safety 'i'

(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 EC-Type Examination Certificate relates only to the design, examination and tests of the specified equipment in accordance to Directive 94/9/EC.

Further requirements of the Directive apply to the manufacturing process and supply of this equipment. These are not covered by this certificate

(12) The marking of the equipment shall include the following:

 **II 2G EEx d [ib] IIC T4**

**EXAM BBG Prüf- und Zertifizier GmbH**

Bochum, dated 25. Februar 2004

Signed: Jockers

Signed: Eickhoff

\_\_\_\_\_  
Certification body

\_\_\_\_\_  
Special services

(13) Appendix to

(14) **EC-Type Examination Certificate**

**BVS 04 ATEX E 020 X**

(15) 15.1 Subject and type

Liquid density meter	type DIMF *.* *** . . .
Density meter series	└──┬──┘
Oscillation element	└──┬──┘
Oscillation fork	1.3
Oscillation pipe	2.0
Transmitter	T
Mounting	└──┬──┘
compact version	V
wall mounting	W
Temperature range sensor housing	└──┬──┘
Standard	S
High	H
Variations not relevant to Ex	└──┬──┘

15.2 Description

The liquid density meter type DIMF\*.\*\*\*\* . . . consists of a electronic housing according to EC Type Examination Certificate DMT 00 ATEX E 010 U closed with threaded covers. The electronic housing provides two compartments of different size, one designed as flameproof terminal compartment the other one designed as electronic compartment fitted with intrinsically safe electronic modules.

For mounting purposes of an associated sensor, the housing is fitted with an adapter. The intrinsically safe sensor may be separated from or directly combined with the enclosure. The adapter is related to the electronic compartment.

The terminal compartment - type of protection flameproof enclosure "d" - is equipped with a combined current limiting and safety shunt assembly module, providing terminals for interconnection of the non intrinsically safe 4 - 20 mA supply and signal circuit. A cable entry certified for this purpose is used to lead the non-intrinsically safe circuit into the terminal compartment.

The intrinsically safe output circuit of the current limiting and safety shunt assembly module is led into the electronic compartment via feed-through capacitors.

The electronic compartment of the liquid density meter only contains intrinsically safe electronic modules (according to EC Type Examination Certificate ZELM 99 ATEX 0008 X) transferring measuring data from an intrinsically safe sensor circuit into the non intrinsically safe 4 - 20 mA supply and signal circuit.

The threaded cover of the electronic compartment is equipped alternatively with a glass window for inspection purposes of the LCD display below.

The intrinsically safe sensor - directly combined with the housing or installed separately - consists of a stainless steel sensor housing fitted with an oscillation fork / oscillation pipe passed by the measured medium.

With regard to construction, the sensor of the liquid density meter type DIMF\*.\*\*\*\* . . . is identical with the sensor of the intrinsically safe liquid density meter type DIMF \*.\*T\*\*... according to EC Type Examination Certificate ZELM 99 ATEX 0008 X.

### 15.3 Parameters

#### 15.3.1 Non intrinsically safe supply and signal circuit (4 - 20 mA current loop)

Rated voltage	$U_N$	DC	24	V
Maximum permitted voltage for normal operation		DC	28,5	V
		AC	250	V
Power consumption	$P_N$		1	W

#### 15.3.2 Internal intrinsically safe supply and signal circuit (internal safety shunt assembly providing current limitation; level of protection EEx ib IIC)

Voltage	$U_o$	DC	30	V
Short circuit current	$I_o$		26,6	mA
Power	$P_o$		798	mW

#### 15.3.3 Ambient temperature range Flameproof electronic housing: $-40\text{ °C} \leq T_a \leq +60\text{ °C}$ and directly combined or separated intrinsically safe sensor according to ZELM 99 ATEX 0008 X: $-40\text{ °C} \leq T_a \leq +58\text{ °C}$

(16) Test and assessment report  
BVS PP 04.2031 EG as of 25.02.2004

(17) Special conditions for safe use

17.1 The "-" - terminal of the non intrinsically safe supply and signal circuit is interconnected to the housing. Grounding of the non intrinsically safe supply and signal circuit / of the housing shall comply with clause 6.6 of EN 50020:2002.

17.2 The liquid density meter type DIMF\*.\*\*\*\* . . . is designed for use in an ambient temperature range  $-40\text{ °C} \leq T_a \leq +60\text{ °C}$ , related to the electronic assembly within the flameproof electronic housing. A temperature of the measured medium up to 210 °C is permitted. Temperature class grouping in relation to maximum ambient / medium temperature is listed in the table below.

An insulation versus excessive heat - installed additionally - may cover half of the spacing-tube as a maximum. The permitted ambient temperature shall be met in the environment directly aside the flameproof electronic housing.

DIMF *.* TV * (compact version)			
temperature class	T Ambient [°C] electronic assembly	T medium [°C]	type
T2	46	210	H
T3	46	200	High temperature
T3	49	170	
T3	50	150	S+H
T4	52	135	Standard temperature and High temperature
T4	54	110	
T4	58	60	
DIMF *.* TW (wall mounting)			
ambient temperature- electronic assembly: 58°C			
temperature class	T ambient [°C] terminal compartment	T medium [°C]	type
T2	67	210	H
T3	68	200	High temperature
T3	71	170	
T3	73	150	S+H
T4	74	135	Standard temperature and High temperature
T4	77	110	
T4	80	80	

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.

44809 Bochum, 25. February 2004  
BVS-Schä/Kw A 20020701

**EXAM BBG Prüf- und Zertifizier GmbH**

  
Certification body

  
Special services