


Translation

(1) EC-Type Examination Certificate

- (2) Equipment and protective systems intended for use in potentially explosive atmospheres - Directive 94/9/EC
- (3) No. of EC-Type Examination Certificate: **BVS 13 ATEX E 033 X**
- (4) Equipment: **Liquid Density Meter type CDM100*******
- (5) Manufacturer: **Micro Motion, Inc.**
- (6) Address: **7070 Winchester Circle, Boulder, Co. 80301, USA**
- (7) The design and construction of this equipment and any acceptable variation thereto are specified in the appendix to this type examination certificate.
- (8) The certification body of DEKRA EXAM 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 13.2067 EG.
- (9) The Essential Health and Safety Requirements are assured by compliance with:
- EN 60079-0:2012 General requirements**
EN 60079-1:2007 Druckfeste Kapselung „d“
EN 60079-11:2012 Intrinsic safety 'i'
EN 60079-31:2009 Schutz durch Gehäuse „t“
- (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 appendix 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 Ex ib IIC T1-T4/T6 Gb** or **II 2G Ex d [ib] IIC T1-T6 Gb**
II 2D Ex ib IIIC T*°C Db **II 2D Ex tb IIIC T*°C Db**
IP 66/IP67 **IP66/IP67**

DEKRA EXAM GmbH
Bochum, dated 4th April 2013

Signed: Dr. Eickhoff

Signed: Dr. Wittler

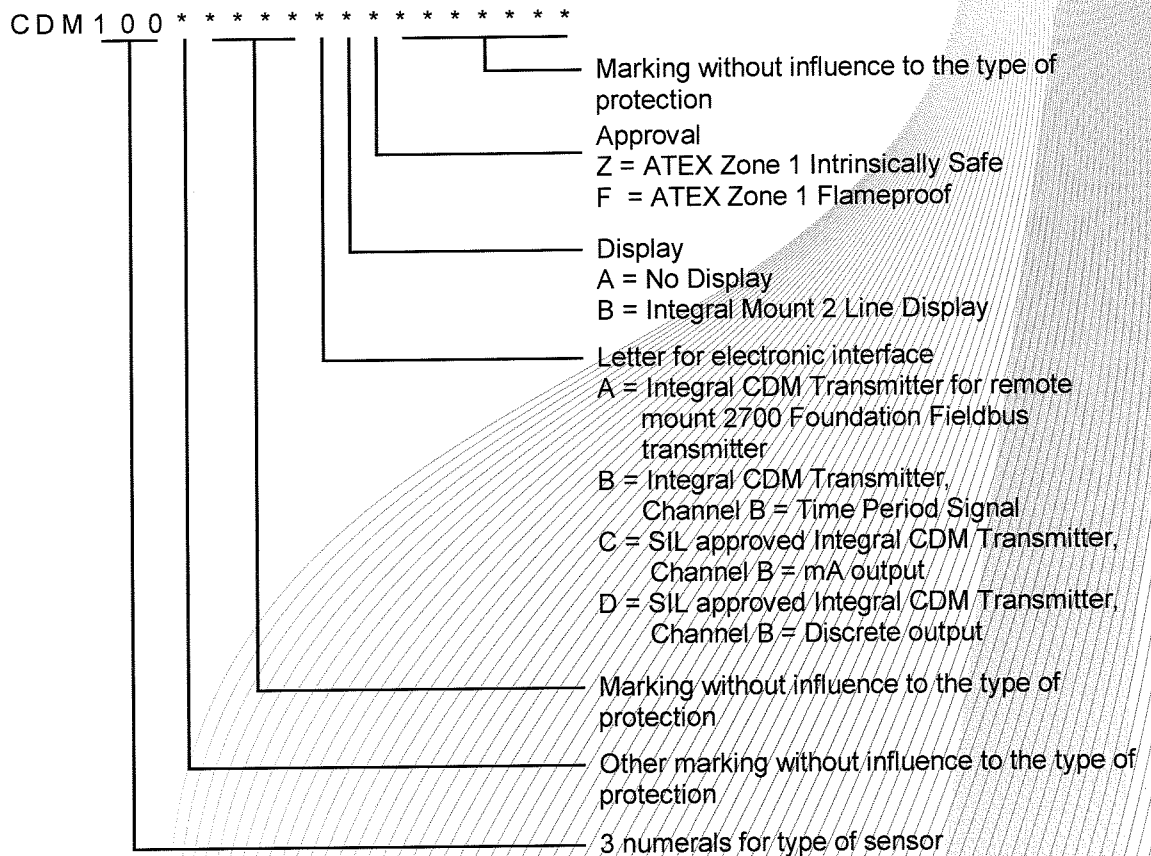
Certification body

Special services unit

- (13) Appendix to
- (14) **EC-Type Examination Certificate
BVS 13 ATEX E 033 X**
- (15) 15.1 Subject and type

Liquid Density Meter type CDM100*****

Instead of the *** letters and numerals will be inserted which characterize the following modifications:



15.2 Description

The Liquid Density Meter consists of a transmitter and a sensor and they are used for density measurement. The CDM100 flow sensor consists of magnetically excited oscillating tubes, contains as electrical components coils, resistors, temperature sensors and terminals and connectors.

The transmitter has its own certificate BVS 13 ATEX E 003 X.

15.3 Parameters

15.3.1 Type CDM100*****(B,C,D)AF*****

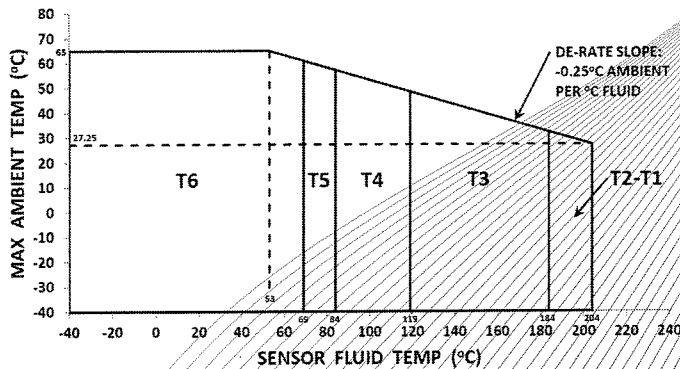
15.3.1.1 Non intrinsically safe main power supply (connector J1)

Nominal voltage		DC	24 V +10 %
Maximum voltage	Um	AC/DC	250 V

15.3.1.2 Non intrinsically safe mA passive output with HART (Channel A, connector J2):

Nominal voltage		DC	24 V +10 %
Maximum voltage	Um	AC/DC	250 V

- 15.3.1.3 Non intrinsically safe configurable passive output; mA or DO or Time Period Signal Output (Channel B, connector J3)
- | | | | |
|-----------------|----|-------|------------|
| Nominal voltage | | DC | 24 V +10 % |
| Maximum voltage | Um | AC/DC | 250 V |
- 15.3.1.4 Non intrinsically safe RS485 communication port (Channel C, connector J5)
- | | | | |
|-----------------|----|-------|------------|
| Nominal voltage | | DC | 24 V +10 % |
| Maximum voltage | Um | AC/DC | 250 V |
- 15.3.1.5 Intrinsically Safe circuits (level of protection Ex ib):
Drive-, Left Pick-Off-, Right Pick-Off- and Temperature element circuits.
- 15.3.1.6 Thermal data
Regulation of temperature class/max. Surface temperature T
The classification into a temperature class/determination of the maximum surface temperature T depend on the temperature of the medium taking into account the maximum operating temperature of the sensor and is shown in the following graph:



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

The maximum surface temperature T for dust is as follows: T6: T80 °C, T5: T95 °C, T4: T130 °C, T3: T195 °C, T2 to T1: T215 °C.

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

- 15.3.2 Type CDM100*****AAZ*****
connected to Remote 2700 transmitter (DMT 01 ATEX E 082 X)
When connected to a Micro Motion 2700 Transmitter, connectors J2 and J3 are not utilized.

- 15.3.2.1 Intrinsically safe power supply circuit (connector J1)
Level of protection Ex ib IIC, Ex ib IIIC

Voltage	Ui	DC	17.22	V
Current	Ii		0.484	A
Power	Pi		2.05	W
Internal capacitance	Ci		negligible	
Internal inductance	Li		negligible	

- 15.3.2.2 Intrinsically safe RS485 communication port (Channel C, connector J5)

Voltage	Ui	DC	17.22	V
Current	Ii		484	mA
Internal capacitance	Ci		1	nF
Internal inductance	Li		negligible	

Level of protection Ex ib IIC, Ex ib IIIC

Voltage	Uo	DC	9.51	V
Current (Instantaneous)	Io		480	mA
Current (steady state)	I		106	mA
Power	Po		786	mW
Internal resistance	Ri		19.8	Ω

For group IIC

Max. external capacitance	Co		85	nF
Max. external inductance	Lo		25	μH
Max. external inductance/resistance ratio	Lo/Ro		31.1	μH/Ω

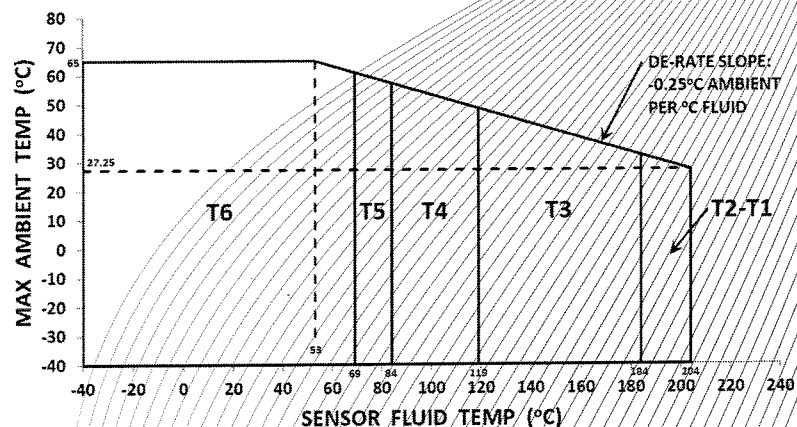
For group IIIC

Max. external capacitance	Co		660	nF
Max. external inductance	Lo		260	μH
Max. external inductance/resistance ratio	Lo/Ro		124.4	μH/Ω

15.3.2.3 Thermal data

Regulation of temperature class/max. Surface temperature T

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



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

The maximum surface temperature T for dust is as follows: T6: T80 °C, T5: T95 °C, T4: T130 °C, T3: T195 °C, T2 to T1: T215 °C.

Ambient temperature range Ta -40 °C – up to +65 °C

15.3.3 Type CDM100*****(B,C,D)(A,B)Z*****

15.3.3.1 Intrinsically safe power supply circuit (connector J1)

Voltage	Ui	DC	30	V
Current	Ii		0.484	A
Power	Pi		2.05	W
Internal capacitance	Ci		negligible	
Internal inductance	Li		negligible	

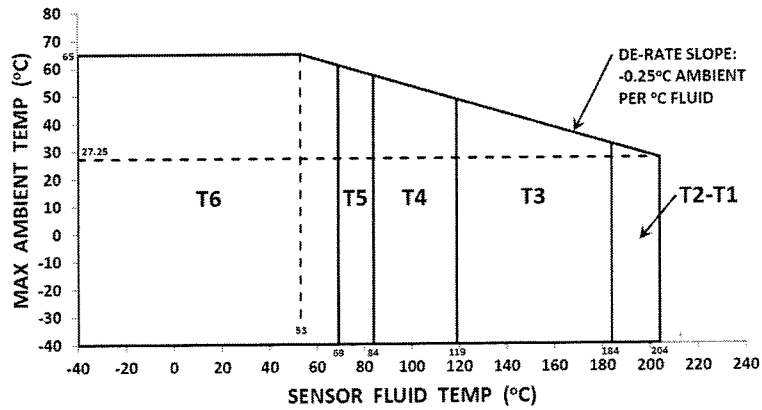
15.3.3.2 Intrinsically safe mA output with HART (Channel A, connector J2):

Voltage	Ui	DC	30	V
Current	Ii		0.484	A
Power	Pi		2.05	W
Internal capacitance	Ci		negligible	
Internal inductance	Li		negligible	



15.3.3.3 Intrinsically safe configurable output mA or DO or Time Period Signal Output (Channel B, connector J3)					
Voltage	Ui	DC	30	V	
Current	Ii		0.484	A	
Power	Pi		2.05	W	
Internal capacitance	Ci		negligible		
Internal inductance	Li		negligible		
15.3.3.4 Intrinsically safe RS485 communication port (Channel C, connector J5)					
Either					
Voltage	Ui	DC	18	V	
Current	Ii		100	mA	
Internal capacitance	Ci		1	nF	
Internal inductance	Li		negligible		
Level of protection Ex ib IIC, Ex ib IIIC					
Voltage	Uo	DC	9.51	V	
Current (Instantaneous)	Io		480	mA	
Current (steady state)	I		106	mA	
Power	Po		786	mW	
Internal resistance	Ri		19.8	Ω	
For group IIC					
Max. external capacitance	Co		85	nF	
Max. external inductance	Lo		154	μH	
Max. external inductance/resistance ratio	Lo/Ro		31.1	μH/Ω	
For group IIIC					
Max. external capacitance	Co		660	nF	
Max. external inductance	Lo		610	μH	
Max. external inductance/resistance ratio	Lo/Ro		124.4	μH/Ω	
or					
Voltage	Ui	DC	17.22	V	
Current	Ii		484	mA	
Internal capacitance	Ci		1	nF	
Internal inductance	Li		negligible		
Level of protection Ex ib IIC, Ex ib IIIC					
Voltage	Uo	DC	9.51	V	
Current (Instantaneous)	Io		480	mA	
Current (steady state)	I		106	mA	
Power	Po		786	mW	
Internal resistance	Ri		19.8	Ω	
For group IIC					
Max. external capacitance	Co		85	nF	
Max. external inductance	Lo		25	μH	
Max. external inductance/resistance ratio	Lo/Ro		31.1	μH/Ω	
For group IIIC					
Max. external capacitance	Co		660	nF	
Max. external inductance	Lo		260	μH	
Max. external inductance/resistance ratio	Lo/Ro		124.4	μH/Ω	
15.3.3.5 Thermal data					
Regulation of temperature class/max. Surface temperature T					
The classification into a temperature class/determination of the maximum surface temperature T depend on the temperature of the medium taking into account the maximum operating temperature of the sensor and are shown in the following graphs:					

15.3.3.5.1 Type CDM100*****(B,C,D)A(F,Z)*****

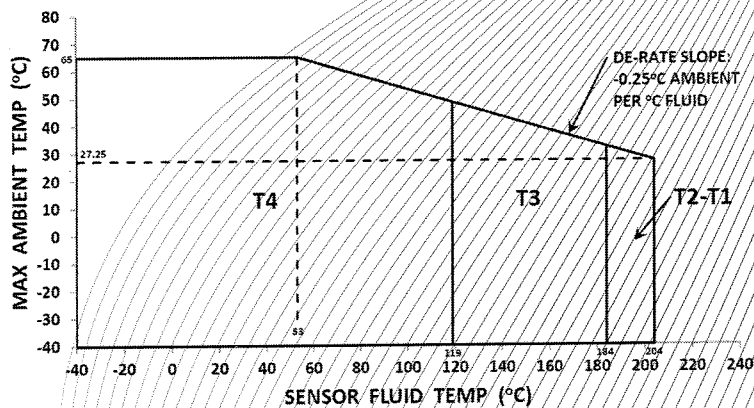


Note: Use the above graph to determine the temperature class for a given fluid and ambient temperature.

The maximum surface temperature T for dust is as follows: T6: T80 °C, T5: T95 °C, T4: T130 °C, T3: T195 °C, T2 to T1: T215 °C.

Ambient temperature range T_a $-40\text{ °C up to }+65\text{ °C}$

15.3.2.5.2 Type CDM100*****(B,C,D)BZ*****



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

The maximum surface temperature T for dust is as follows: T4: T130 °C, T3: T195 °C, T2 to T1: T215 °C.

Ambient temperature range T_a $-40\text{ °C up to }+65\text{ °C}$

(16) Test and assessment report

BVS PP 13.2067 EG as of 4th April 2013

(17) Special conditions for safe use

17.1 For the application of the transmitter in an ambient temperature of less than – 20 °C suitable cable and cable entries or conduit entries certified for this condition shall be used.

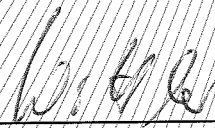
17.2 If certified conduit entries are used for the connection of the transmitter enclosure, the associated stopping boxes shall be installed immediately at the enclosure.

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
44809 Bochum, 4th April 2013
BVS-Schu/Ma A 20121228



Certification body



Special services unit