



Translation

EC-Type Examination Certificate

- (1)
- (2) **- Directive 94/9/EC -**
Equipment and protective systems intended for use
in potentially explosive atmospheres
- (3) **BVS 08 ATEX E 099 X**
- (4) **Equipment: Transmitter type 2200S*****Z******
- (5) **Manufacturer: Micro Motion, Inc.**
- (6) **Address: 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 08.2129 EG.
- (9) The Essential Health and Safety Requirements are assured by compliance with:
EN 60079-0:2006 General requirements
EN 60079-11:2007 Intrinsic safety 'i'
EN 61241-0:2006 General requirements
EN 61241-11:2006 Intrinsic safety 'iD'
- (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 IIB/IIC T4
II 2D Ex ibD 21 T70°C

DEKRA EXAM GmbH

Bochum, dated 03. September 2008

Signed: Dr. Jockers

Certification body

Signed: Dr. Eickhoff

Special services unit

(13) Appendix to

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

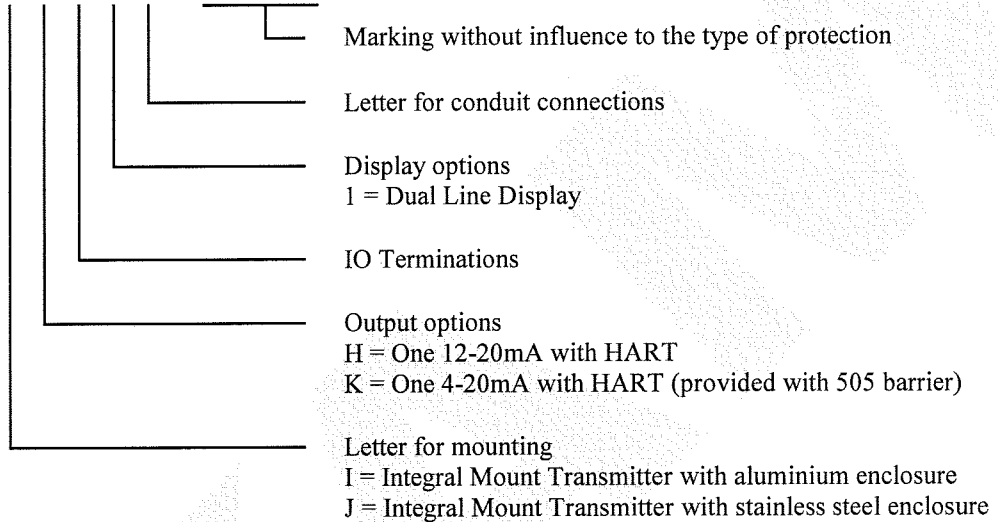
BVS 08 ATEX E 099 X

(15) 15.1 Subject and type

Transmitter type 2200S*****Z****

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

2 2 0 0 S * * * 1 * Z * * * *



15.2 Description

The transmitter is an integral mount apparatus which consists of two printed circuit boards which are completely encapsulated. The encapsulated assembly and a user interface with a display are fastened inside a metal enclosure (BVS PP 07.2093 EG). The enclosure is either aluminium or stainless steel.

The enclosure has two openings for cable glands or blanking plugs.

The transmitter is integrally mounted to a Coriolis Meter and makes a connection between the two-wire input circuit to a 9-wire connection to the Coriolis meter.

15.3 Parameters

15.3.1 Intrinsically safe input circuit (terminals 1 - 2)

| | | | | |
|----------------------|----|----|------|----|
| Voltage | Ui | DC | 28 | V |
| Current | Ii | | 120 | mA |
| Power | Pi | | 0.84 | W |
| Internal capacitance | Ci | | 2200 | pF |
| Internal inductance | Li | | 30 | μH |

15.3.2 Intrinsically safe output circuits

15.3.2.1 Drive circuit (J4 pins 7-8)

| | | | | |
|---------------------|----|----|------|----|
| Voltage | Uo | DC | 10.5 | V |
| Current | Io | | 80 | mA |
| Power | Po | | 0.84 | W |
| Internal resistance | Ri | | 4.32 | Ω |

For group IIC

| | | | | |
|---|-------|--|------|------|
| Max. external capacitance | Co | | 2.41 | μF |
| Max. external inductance | Lo | | 5.9 | μH |
| Max. external inductance/resistance ratio | Lo/Ro | | 5.5 | μH/Ω |

For group IIB

| | | | | |
|---|-------|--|------|------|
| Max. external capacitance | Co | | 16.8 | μF |
| Max. external inductance | Lo | | 24 | μH |
| Max. external inductance/resistance ratio | Lo/Ro | | 22 | μH/Ω |

The maximum external inductance L (sensor coil) can be calculated with the following term:

$$L = 2 \times E \times \left(\frac{Ri + Ro}{1.5 \times Uo} \right)^2$$

whereby E = 40 μJ for group IIC will be inserted and E = 160 μJ for group IIB.

Ro is the sensor coil internal resistance plus the sensor coil series resistor.

15.3.2.2 Pick-off circuits (J4 pins 3 to 6)

| | | | | |
|---------|----|----|-------|----|
| Voltage | Uo | DC | 12.6 | V |
| Current | Io | | 4.29 | mA |
| Power | Po | | 13.52 | mW |

For group IIC

| | | | | |
|---|-------|--|------|------|
| Max. external capacitance | Co | | 1.15 | μF |
| Max. external inductance | Lo | | 1.93 | H |
| Max. external inductance/resistance ratio | Lo/Ro | | 2.2 | mH/Ω |

For group IIB

| | | | | |
|---|-------|--|-----|------|
| Max. external capacitance | Co | | 7.4 | μF |
| Max. external inductance | Lo | | 7.7 | H |
| Max. external inductance/resistance ratio | Lo/Ro | | 8.9 | mH/Ω |

15.3.2.3 Temperature circuit (J4 pins 1, 2 and 9)

| | | | | |
|---------|----|----|------|----|
| Voltage | Uo | DC | 12.6 | V |
| Current | Io | | 3.31 | mA |
| Power | Po | | 2.2 | mW |

For group IIC

| | | | | |
|---|-------|--|------|------|
| Max. external capacitance | Co | | 1.15 | μF |
| Max. external inductance | Lo | | 3.24 | H |
| Max. external inductance/resistance ratio | Lo/Ro | | 3.0 | mH/Ω |

For group IIB

| | | | |
|---|-------|------|------|
| Max. external capacitance | Co | 7.4 | μF |
| Max. external inductance | Lo | 12.9 | H |
| Max. external inductance/resistance ratio | Lo/Ro | 12 | mH/Ω |

As values for the external inductance and capacitance for dust application the values of Group IIB are valid.

15.3.3 Ambient temperature range Ta -40 °C up to +60 °C

(16) Test and assessment report
BVS PP 08.2129 EG as of 03.09.2008

(17) Special conditions for safe use

17.1 The permissible ambient temperature range is -40 °C up to +60 °C. The use of the transmitter at an ambient temperature lower than -20 °C is only admissible, if the cables are suitable and the cable entries resp. blanking plugs are certified for that temperature and use.

17.2 For use in explosive atmospheres caused by combustible dust suitable cables and for that purpose certified cable entries resp. blanking plugs shall be used.

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, 03. September 2008
BVS-Schu / Her A 20080501

DEKRA EXAM GmbH



Certification body



Special services unit