



Translation

EC-Type Examination Certificate

(1)

EC-Type Examination Certificate

(2)

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

(3)

DMT 02 ATEX E 242 X

(4)

Equipment: Transmitter Type 3500 ***1B******

(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 schedule to this type examination certificate.

(8)

The certification body of Deutsche Montan Technologie 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 02.2125 EG.

(9)

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

EN 50014:1997+A1-A2 General requirements
EN 50020:1994 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:

Ex II (2) G [EEx ib] IIB/IIC

Deutsche Montan Technologie GmbH

Essen, dated 25. November 2002

Signed: Jockers

Signed: Eickhoff

DMT-Certification body

Head of special services unit



(13) Appendix to

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

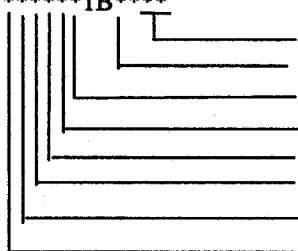
DMT 02 ATEX E 242 X

(15) 15.1 Subject and type

Transmitter type 3500 *****1B****

Instead of the ** in the complete denomination letters and numerals will be inserted which identify the following variations:

type 3500 *****1B****



- letters for application software
- letter for language
- letter A or B for terminals
- numeral 3, 4, 5 or 6 for sensor interface
- numeral for additional hardware
- letter for communication
- numeral 1 or 2 for power supply
- letter R, P or N for mounting options

15.2 Description

The transmitter is, in combination with a sensor, used for mass flow measurement.

The electrical components of the transmitter are securely fixed in a light metal housing which is mounted outside the hazardous area.

15.3 Parameters

15.3.1 power supply circuit (terminals J3-1 and J3-3, Power Board)
for type 3500 *1*****1B****
voltage

AC 85 – 265 V

for type 3500 *2*****1B****
voltage
max. voltage

Um

DC 18 - 30 V
AC/DC 265 V

15.3.2 intrinsically safe sensor circuits for type 3500 ****3*1B****

15.3.2.1 Drive circuit (terminals J2-A12 - C12)

voltage
current (puls)
limited by a fuse with a rated current of
power

Uo
Io
Po

DC 11,4 V
1,14 A
250 mA
1,2 W



type of protection EEx ib IIC				
max. external inductance	Lo		27,4	μH
max. external capacitance	Co		1,7	μF
max. inductance/resistance ratio	Lo/Ro		< 10,9	μH/Ω
type of protection EEx ib IIB				
max. external inductance	Lo		109	μH
max. external capacitance	Co		11,7	μF
max. inductance/resistance ratio	Lo/Ro	<	43,7	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 and E = 160 μJ for group IIB will be inserted.

15.3.2.2 Pick-Off circuits (terminals J2-A8/C8 and J2-A10/C10)				
voltage	Uo	DC	15,6	V
current	Io		10	mA
power	Po		40	mW
type of protection EEx ib IIC				
max. external inductance	Lo		355	mH
max. external capacitance	Co		500	nF
type of protection EEx ib IIB				
max. external inductance	Lo		1,4	H
max. external capacitance	Co		3,03	μF
15.3.2.3 Temperature circuit (terminals J2-C6/A6/C4)				
voltage	Uo	DC	15,6	V
current	Io		10	mA
power	Po		40	mW
type of protection EEx ib IIC				
max. external inductance	Lo		355	mH
max. external capacitance	Co		500	nF
type of protection EEx ib IIB				
max. external inductance	Lo		1,4	H
max. external capacitance	Co		3,03	μF
15.3.3 intrinsically safe sensor circuits for type 3500 ****4*1B****				
15.3.3.1 Drive circuit (terminals J2-A12 - C12)				
voltage	Uo	DC	11,4	V
current (puls)	Io		1,14	A
limited by a fuse with a rated current of			250	mA
power	Po		1,2	W



type of protection EEx ib IIC				
max. external inductance	Lo		27,4	μH
max. external capacitance	Co		1,7	μF
max. inductance/resistance ratio	Lo/Ro		< 10,9	μH/Ω

type of protection EEx ib IIB				
max. external inductance	Lo		109	μH
max. external capacitance	Co		11,7	μF
max. inductance/resistance ratio	Lo/Ro	<	43,7	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 and E = 160 μJ for group IIB will be inserted.

15.3.3.2	Pick-off circuit (terminals J2-A8/C8 and J2-A10/C10)			
	voltage	Uo	DC	21,13 V
	current	Io		8,45 mA
	power	Po		45 mW

type of protection EEx ib IIC				
max. external inductance	Lo		490	mH
max. external capacitance	Co		180	μF

type of protection EEx ib IIB				
max. external inductance	Lo		1,9	H
max. external capacitance	Co		1,24	nF

15.3.3.3	Temperature circuit (terminals J2-C6/A6/C4)			
	voltage	Uo	DC	21,13 V
	current	Io		17 mA
	power	Po		90 mW

type of protection EEx ib IIC				
max. external inductance	Lo		122	mH
max. external capacitance	Co		180	nF

type of protection EEx ib IIB				
max. external inductance	Lo		492	mH
max. external capacitance	Co		1,24	μF

15.3.4	intrinsically safe sensor circuits for type 3500 ****5*1B**** and type 3500 ****6*1B**** (terminals J2-A4/C4 – J2-A6/C6 4-wire board)			
	voltage	Uo	DC	17,22 V
	current	Io		484 mA
	power	Po		2,05 W

type of protection EEx ib IIC				
max. external inductance	Lo		151,7	μH
max. external capacitance	Co		333	nF
max. inductance/resistance ratio	Lo/Ro	<	17,06	μH/Ω



type of protection EEx ib IIB				
max. external inductance	Lo	607		μH
max. external capacitance	Co	2,04		μF
max. inductance/resistance ratio	Lo/Ro	<	68,2	$\mu\text{H}/\Omega$

15.3.5 ambient temperature range Ta - 20 °C up to + 60 °C

(16) Test and assessment report

BVS PP 02.2125 EG as of 25.11.2002

(17) Special conditions for safe use


- 17.1 The transmitter has to be installed outside the hazardous area into a housing which shall at least have a degree of protection of IP 20 according to IEC Publication 529.
- 17.2 The installation of the transmitter shall be such that the clearances between bare parts of intrinsically safe circuits and metallic housing parts will be at least 3 mm and between bare parts of intrinsically safe circuits and bare parts of the non-intrinsically safe circuits be at least 6 mm.
- 17.3 For type 3500 *****A1B**** the terminals for connection of external intrinsically safe circuits shall be so arranged that the distance between those terminals and terminals or uninsulated conductors of non-intrinsically safe circuits will be at least 50 mm or that they are separated by a barrier according to EN 50020 clause 6.4.1.

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.

45307 Essen, 25.11.2002
BVS-Schu/Mi A 20020424

Deutsche Montan Technologie GmbH


DMT-Certification body


Head of special services unit



Translation



1st Supplement

(Supplement in accordance with Directive 94/9/EC Annex III number 6)

to the EC-Type Examination Certificate DMT 02 ATEX E 242 X

Equipment: Transmitter type 3500*****1B****

Manufacturer: Micro Motion, Inc.

Address: Boulder, Co. 80301, USA

Description

The transmitter can be modified according to the descriptive documents as mentioned in the pertinent test and assessment report.

The Essential Health and Safety Requirements of the modified equipment are assured by compliance with:
EN 50014:1997+A1-A2 General requirements
EN 50020:2002 Intrinsic safety 'i'

Parameters

unchanged

Test and assessment report

BVS PP 02.2125 EG as of 23.04.2003

Deutsche Montan Technologie GmbH

Essen, dated 23. April 2003

signed: Eickhoff

DMT-Certification body

signed: Wittler

Head of special services unit

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.

45307 Essen, 23.04. 2003
BVS-Schu/Mi A 20030139

Deutsche Montan Technologie GmbH


DMT-Certification body


Head of special services unit



Translation



2nd Supplement

(Supplement in accordance with Directive 94/9/EC Annex III number 6)

to the EC-Type Examination Certificate DMT 02 ATEX E 242 X

Equipment: Transmitter type 3500 *****1B****
Manufacturer: Micro Motion, Inc.
Address: Boulder, Co. 80301, USA

Description

The transmitter can be modified according to the descriptive documents as mentioned in the pertinent test and assessment report.

The Essential Health and Safety Requirements of the modified equipment are assured by compliance with:

EN 50014:1997+A1-A2 General requirements

EN 50020:2002 Intrinsic safety 'i'

Test and assessment report

BVS PP 02.2125 EG as of 25.11.2003

Deutsche Montan Technologie GmbH

Bochum, dated 25. November 2003

signed: Jockers
DMT Certification body

signed: Eickhoff
Special services unit

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, 25.11.2003
BVS-Schu/Ar A 20030854

Deutsche Montan Technologie GmbH


DMT Certification body


Special services unit



3rd Supplement

(Supplement in accordance with Directive 94/9/EC Annex III number 6)

to the EC-Type Examination Certificate DMT 02 ATEX E 242 X

Equipment: Transmitter type 3500*****1B****

Manufacturer: Micro Motion, Inc.

Address: Boulder, Co. 80301, USA

Description

The transmitter can be modified according to the descriptive documents as mentioned in the pertinent test and assessment report and the following variations are also available:

Type 3500P****C1B**** (length of I/O cable 0,6 m)

Type 3500P****D1B**** (length of I/O cable 1,5 m)

Type 3500P****E1B**** (length of I/O cable 3 m)

In these variations the intrinsically safe circuits will be connected via an I/O cable with different length and a terminal block.

The Essential Health and Safety Requirements of the modified equipment are assured by compliance with:

EN 50014:1997+A1-A2 General requirements

EN 50020:2002 Intrinsic safety 'i'

Test and assessment report

BVS PP 02.2125 EG as of 04.05.2004

EXAM BBG Prüf- und Zertifizier GmbH

Bochum, dated 04. May 2004

Signed: Dr. Jockers

Certification body

Signed: Dr. Eickhoff

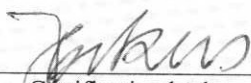
Special services

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, 04. May 2004

BVS-Schu/Kw A 20030949

EXAM BBG Prüf- und Zertifizier GmbH



Certification body



Special services



Translation

4th Supplement

(Supplement in accordance with Directive 94/9/EC Annex III number 6)

to the EC-Type Examination Certificate DMT 02 ATEX E 242 X

Equipment: Transmitter type 3500*****1B****
Manufacturer: Micro Motion, Inc.
Address: Boulder, Co. 80301, USA

Description

The transmitter can be modified slightly. The transmitter has been evaluated acc to the standards EN 60079-**. This variation of the transmitter gets the additional marking Construction Identification Code CIC A2.

The Essential Health and Safety Requirements of the modified equipment are assured by compliance with:

EN 60079-0:2006 General requirements
EN 60079-11:2007 Intrinsic safety 'i'

The marking of the equipment shall include the following:

 II (2)G [Ex ib] IIB/IIC

Special conditions for safe use

- 1 The transmitter has to be installed outside the hazardous area into a housing which shall at least have a degree of protection of IP 20 according to EN 60529.
- 2 The installation of the transmitter shall be such that the clearances between bare parts of intrinsically safe circuits and metallic housing parts will be at least 3 mm and between bare parts of intrinsically safe circuits and bare parts of the non-intrinsically safe circuits be at least 6 mm.
- 3 For type 3500 *****A1B**** the terminals for connection of external intrinsically safe circuits shall be so arranged that the distance between those terminals and terminals or bare parts of non-intrinsically safe circuits will be at least 50 mm or that they are separated by a barrier according to EN 60079-11 clause 6.2.1.



Test and assessment report
BVS PP 02.2125 EG as of 26.11.2008

DEKRA EXAM GmbH
Bochum, dated 26. November 2008

Signed: Migenda
Certification body

Signed: Wittler
Special services unit

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, 26. November 2008
BVS-Schu / Her A 20070743

DEKRA EXAM GmbH

Migenda
Certification body

Wittler
Special services unit