



Translation

EC-Type Examination Certificate

- (1)
- (2) **- Directive 94/9/EC -**
Equipment and protective systems intended for use
in potentially explosive atmospheres
- (3) **BVS 05 ATEX E 021 X**
- (4) **Equipment: Massflowmeter converter type UMC3 with control unit BE2**
- (5) **Manufacturer: Heinrichs Messtechnik GmbH**
- (6) **Address: D 50739 Köln**
- (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 05.2008 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 50019:2000 Increased safety 'e'
EN 50020:2002 Intrinsic safety 'i'
EN 50284:1999 Equipment Group II Category 1G
- (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 (1)2G EEx d[ia] IIB/IIC T3-T6 or
II (1)2G EEx de[ia] IIB/IIC T3-T6

EXAM BBG Prüf- und Zertifizier GmbH

Bochum, dated 22. February 2005

Signed: Dr. Jockers

Certification body

Signed: Dr. Eickhoff

Special services unit

(13) Appendix to

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

BVS 05 ATEX E 021 X

(15) 15.1 Subject and type

Mass flow meter converter type UMC3 with control unit BE2

15.2 Description

The mass flow meter converter is used in combination with a mass flow sensor for measurement of mass flow of liquids and gases in pipes.

The converter consists of an enclosure type SG1 and the electronic devices fixed without possibility of self-loosening inside. The terminal compartment can be type of protection "d" or "e".

The control unit can also be fixed in this housing or can be mounted separately.

15.3 Parameters

15.3.1 Power circuit (terminals L, N and PE)

Nominal voltage		AC	90 - 230	V
max. voltage	Um	AC	265	V
Nominal voltage		AC	24	V
max. voltage	Um	AC	30	V
Nominal voltage		DC	19 - 36	V
max. voltage	Um	DC	36	V

15.3.2 non intrinsically safe circuits

- Current output 1 (terminals 41 - 42)
- Current output 2 (terminals 43 - 44)
- Binary output 1 passive (terminals 46 - 47)
- Binary output 1 active (terminals 45 and 48)
- Binary output 2 passive (terminals 49 - 50)
- Binary output 3 passive (terminals 53 - 54)
- Binary input (terminals 51 - 52)
- Profibus DP (terminals 37 - 38)

max. voltage	Um	AC/DC	60	V
max. current of the power supply			500	mA

15.3.3 Sensor circuits type of protection EEx ia II

15.3.3.1 Energizing circuit (terminals 9 and 10)

linear output characteristic

Voltage	Uo	DC	19,5	V
Current	Io		90	mA
Power	Po		400	mW

type of protection EEx ia IIC

max. external inductance	Lo		5	mH
max. external capacitance	Co		240	nF

	type of protection EEx ia IIB				
	max. external inductance	Lo		18	mH
	max. external capacitance	Co		1490	nF
15.3.3.2	Temperature sensor circuit (terminals 5 up to 8)				
	Voltage	Uo	DC	19,5	V
	Current	Io		6,4	mA
	Power	Po		31	mW
	linear output characteristic				
	type of protection EEx ia IIC				
	max. external capacitance	Lo		870	mH
	type of protection EEx ia IIB	Co		225	nF
	max. external inductance				
	max. external inductance	Lo		1000	mH
	max. external capacitance	Co		1475	nF
15.3.3.3	Sensor circuit (terminals 1 - 2 and 3 - 4)				
	values for each circuit				
	voltage	Uo	DC	19,5	V
	Current	Io		25	mA
	Power	Po		128	mW
	linear output characteristic				
	type of protection EEx ia IIC				
	max. external inductance	Lo		58	mH
	max. external capacitance	Co		154	nF
	type of protection EEx ia IIB				
	max. external inductance	Lo		210	mH
	max. external capacitance	Co		1404	nF
15.3.4	Current output 1 (terminals 11 – 12) and current output 2 (terminals 13 - 14)				
	type of protection EEx ia II				
	linear output characteristic				
	Voltage	Uo	DC	19,2	V
	Current	Io		84	mA
	Power	Po		400	mW
	type of protection EEx ia IIC				
	max. external inductance	Lo		5	mH
	max. external capacitance	Co		230	nF
	type of protection EEx ia IIB				
	max. external inductance	Lo		19,8	mH
	max. external capacitance	Co		1,53	µF

15.3.5	Binary output 1 (terminals 16 - 17) binary output 2 (terminals 19 -20) and binary output 3 (terminals 33 -34) floating opto coupler output circuit type of protection EEx ia IIC				
	Voltage	U _i	DC	30	V
	Current	I _i		200	mA
	Power	P _i		3	W
	effective internal inductance	L _i		0,2	mH
	effective internal capacitance	C _i		20	nF
15.3.6	Binary input (terminals 21 - 22), type of protection EEx ia II linear output characteristic				
	Voltage	U _o	DC	30	V
	Current	I _o		15	mA
	Power	P _o		113	mW
	type of protection EEx ia IIC				
	max. external inductance	L _o		160	mH
	max. external capacitance	C _o		64,8	nF
	type of protection EEx ia IIB				
	max. external inductance	L _o		560	mH
	max. external capacitance	C _o		558,8	nF
15.3.7	Communication circuits				
15.3.7.1	Profibus PA (terminals 39 - 40), type of protection EEx ia IIC for the connection of a certified PROFIBUS PA circuit in accordance with the FISCO-model (PTB Report PTB-W-53/IEC 60079-28)				
	effective internal inductance	L _i	negligible		
	effective internal capacitance	C _i		1,2	nF
15.3.7.2	Profibus RS 485-IS (DP) (terminals 35 und 36), type of protection EEx ia IIC linear output characteristic				
	Voltage	U _o	DC	4,1	V
	Current	I _o		59	mA
	Power	P _o		61	mW
	for the connection of an intrinsically safe circuit with the following maximum value:				
	voltage	U _i	DC	4,5	V
	effective internal inductance	L _i	negligible		
	effective internal capacitance	C _i	negligible		
15.3.8	Ambient temperature range	T _a			
15.3.8.1	for the remote mounted control device type BE			- 20 °C up to + 60 °C	

- 15.3.8.2 for the mass flow meter converter type UMC3 depending on the process temperature, the installation (use of a distance element with a length of 100 mm) and the temperature class shown in the following table:

distance element	process temperature - 20 °C up to	ambient temperature - 20 °C up to	temperature class
without	80 °C	60 °C	T6
without	100 °C	55 °C	T5
with	130 °C	55 °C	T4
with	150 °C	50 °C	T3

if the converter is mounted remote from the process for temperature class T6 the ambient temperature range is - 20 °C up to + 60 °C

(16) Test and assessment report

BVS PP 05.2008 EG as of 22.02.2005


(17) Special conditions for safe use

- 17.1 If the mass flow meter converter is connected by conduit entries they have to be certified for this purpose and the associated stopping boxes have to be mounted immediately to the enclosure.
- 17.2 The control device type BE is designed for use in an ambient temperature range of - 20 °C up to + 60 °C.
- 17.3 The correlation between ambient temperature range, process temperature and temperature class is shown in the manufacturer's instructions.

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, 22.02 2005
BVS-Schu/Mi A 20040447

EXAM BBG Prüf- und Zertifizier GmbH



Certification body



Special services unit



1. Nachtrag

(Ergänzung gemäß Richtlinie 94/9/EG Anhang III Ziffer 6)

zur EG-Baumusterprüfbescheinigung BVS 05 ATEX E 021 X

Gerät: Masse-Durchflussmessumformer Typ UMC3 mit
Bedieneinheit BE2

Hersteller: Heinrichs Messtechnik GmbH

Anschrift: 50739 Köln

Beschreibung

Der Masse-Durchflussmessumformer kann auch nach den im zugehörigen Prüfprotokoll aufgeführten Prüfungsunterlagen für den Einsatz in durch explosionsfähige Staubatmosphären gefährdeten Bereichen, die Kategorie 2D erfordern, und einen erweiterten Umgebungstemperaturbereich von -40 °C bis +80 °C verwendet werden.

Außerdem wurde die Geräteelektronik in einigen Punkten modifiziert.

Die abgesetzte Bedieneinheit ist nun ebenfalls für den Einsatz in durch explosionsfähige Staubatmosphären gefährdeten Bereichen, die Kategorie 2D erfordern, und einen erweiterten Umgebungstemperaturbereich von -40 °C bis +70 °C verwendbar

Der Masse-Durchflussmessumformer und die externe Bedieneinheit entsprechen auch den Normen EN 60079-0:2006, EN 60079-1:2004, EN 60079-7:2004, EN 61241-0 2006, EN 61241-1 2004 und EN 60079-11:2007, die Kennzeichnung des Gerätes hat sich entsprechend der neuen Normen geändert.

Die grundlegenden Sicherheits- und Gesundheitsanforderungen der geänderten Ausführung werden erfüllt durch Übereinstimmung mit:

EN 60079-0:2006	Allgemeine Anforderungen
EN 60079-1:2004	Druckfeste Kapselung
EN 60079-7:2004	Erhöhte Sicherheit
EN 61241-0 2006	Allgemeine Anforderungen
EN 61241-1 2004	Schutz durch Gehäuse
EN 60079-11:2007	Eigensicherheit

Die Kennzeichnung des Gerätes muss die folgenden Angaben enthalten:

II (1)2G Ex d[ia] IIB/IIC T6-T3 bzw.
 II (1)2G Ex de[ia] IIB/IIC T6-T3 und
II 2D Ex tD A21 IP6X T80°C-T150°C für den Umformer

II 2G Ex ia IIC T6 für die externe Bedieneinheit

Kenngößen

Bis auf die folgenden Kenngößen bleiben die Werte unverändert.

Umgebungstemperaturbereich Ta

- für die abgesetzte Bedieneinheit Typ BE - 40 °C bis + 70 °C
- für den Masse-Durchflussmessumformer in Abhängigkeit von der Prozesstemperatur, der Montageart (Einsatz eines Distanzstückes von 100mm Länge) und der Temperaturklasse entsprechend der folgenden Tabelle:

Distanzstück -	Prozesstemperatur - - 40 °C bis	Umgebungstemperatur - - 40 °C bis o	Temperaturklasse 2G / Oberflächen- temperaturangabe 2D
ohne	80 °C	60 °C	T6/T80°C
ohne	80 °C	80 °C	T5/T100°C
ohne	100 °C	75 °C	T5/T100°C
mit	130 °C	55 °C	T4/T130°C
mit	150 °C	50 °C	T3/T150°C

Bei vom Prozess abgesetzter Montage des Messumformers gilt für die Temperaturklasse T6 bzw. die Oberflächentemperaturangabe T80°C der Umgebungstemperaturbereich - 20 °C bis + 60 °C.

Besondere Bedingungen für die sichere Anwendung bzw. Verwendungshinweise

Bei Anschluss des Masse-Durchflussmessumformers über für diesen Zweck gesondert zugelassene Rohrleitungseinführungen müssen die zugehörigen Abdichtungsvorrichtungen unmittelbar am Gehäuse angeordnet sein.

Die externe Bedieneinheit Typ BE2 ist zum Einsatz in einem Umgebungstemperaturbereich von -40°C bis +70°C geeignet.

Der Masse-Durchflussmessumformer Typ UMC3 ist zum Einsatz in einem Umgebungstemperaturbereich von -40°C bis +80°C geeignet.

Die Zuordnung zwischen Umgebungstemperaturbereich, Prozesstemperatur und Temperaturklasse ist der Betriebsanleitung zu entnehmen.

Die Spaltlängen der zünddurchschlagsicheren Spalte diese Betriebsmittels sind teils länger und die Spaltweiten der zünddurchschlagsicheren Spalte sind teils kleiner als in Tabelle 1 von EN 60079-1:2004 gefordert. Bei Reparaturen der spaltbildenden Teile sind die Maße der Herstellerdokumentation einzuhalten.

Bei Einsatz des Masse-Durchflussmessumformers in einem Umgebungstemperaturbereich von unter -20°C oder über +60°C sind temperaturbeständige Leitungen bzw. Kabel und für einen Einsatzbereich von 90 °C bescheinigte Kabel- und Leitungseinführungen bzw. Verschlusselemente zu verwenden. In der Kategorie 2D sind nur fest verlegte Leitungen oder zugelassene Kabel- und Leitungseinführungen mit Verdrehenschutz zulässig.

Prüfprotokoll

BVS PP 05.2008 EG, Stand 05.03.2008

DEKRA EXAM GmbH

Bochum, den 05. März 2008



Zertifizierungsstelle





Fachbereich

Translation

(1) 2. Supplement to the EC-Type Examination Certificate

- (2) Equipment and protective systems intended for use in potentially explosive atmospheres - Directive 94/9/EC Supplement accordant with Annex III number 6
- (3) No. of EC-Type Examination Certificate: **BVS 05 ATEX E 021 X**
- (4) Equipment: **Mass flow meter converter type UMC3 with control unit BE2**
- (5) Manufacturer: **Heinrichs Messtechnik GmbH**
- (6) Address: **50739 Köln, Germany**
- (7) The design and construction of this equipment and any acceptable variation thereto are specified in the appendix to this supplement.
- (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 05.2008.EG.
- (9) The Essential Health and Safety Requirements are assured by compliance with:
EN 60079-0:2009 General requirements EN 61241-0:2006 General requirements
EN 60079-1:2004 Flameproof enclosure 'd' EN 61241-1:2004 Protection by enclosures 'tD'
EN 60079-7:2003 Increased safety 'e'
EN 60079-11:2007 Intrinsic safety 'i'
EN 60079-27:2006 Fieldbus systems FISCO
- (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 supplement to the 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:

for the mass flow meter converter

	II (1)2G Ex d [ia] IIB/IIC T6-T3	resp.
	II (1)2G Ex d e [ia] IIB/IIC T6-T3	and
	II 2D Ex tD A21 IP 6x T80°C-T150°C	

for the control unit

 **II 2G Ex ia IIC T6**

DEKRA EXAM GmbH
Bochum, dated 01.03.2011

Signed: Simanski

Signed: Dr. Eickhoff

Certification body

Special services unit

(13) Appendix to

(14) **2. Supplement to the EC-Type Examination Certificate
BVS 05 ATEX E 021 X**

(15) 15.1 Subject and type

Mass flow meter converter type UMC3 with control unit BE2

15.2 Description

The flow meter converter can be modified according to the descriptive documents as mentioned in the pertinent test and assessment report. Inside the enclosure a communication module type FBK-2/HW/*** (PTB 09 ATEX 2002 U) can be fixed.

15.3 Parameters

Values remain unchanged except those the following parameters.

Communication circuits type of protection Ex ia IIC
Profibus PA (terminals 39 - 40)
FOUNDATION Fieldbus (terminals 55 - 56)

1. for use as field device in a fieldbus system in accordance with FISCO with
Voltage U_i DC 17.5 V
effective internal inductance L_i negligible
effective internal capacitance C_i 1.2 nF
2. or for connection to a circuit with the following max. values
Voltage U_i DC 32 V
Current I_i 280 mA
Power P_i 2 W

The effective internal values are:
effective internal inductance L_i negligible
effective internal capacitance C_i 1.2 nF

(16) Test and assessment report

BVS PP 05.2008 EG as of 01.03.2011

(17) Special conditions for safe use

- 17.1 If the mass flow meter converter is connected by conduit entries they have to be certified for this purpose and the associated stopping boxes have to be mounted immediately to the enclosure.
- 17.2 The external control device type BE2 is designed for use in an ambient temperature range of -40 °C up to +70 °C.
- 17.3 The mass flow meter converter is suitable for use in an ambient temperature range from -40 °C to +80 °C.
- 17.4 The relation between ambient temperature, process temperature and temperature class is stated in the manual.

- 17.5 The joint widths of the flameproof joint of this equipment are in parts longer, and its gaps are in parts shorter than required by Table 1 of EN 60079-1:2004. If any of the parts forming the joint shall be repaired, the dimensions of the manufacturer's documentation have to be kept.
- 17.6 When using the mass flow meter converter in an ambient temperature range that exceeds either -20 °C or +60 °C temperature-resistant cables and conductors have to be used as well as cable entries and blanking elements that are certified for use at 90 °C. Where category 2D applies; only the use of attached cables or of approved cable entries to prevent twisting is permitted.

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, 01.03.2011
BVS-Schu/Schae A 20110013



Certification body



Special services unit