



Translation

EC-Type Examination Certificate

- Directive 94/9/EC -

**Equipment and protective systems intended for use
in potentially explosive atmospheres**

DMT 99 ATEX E 014 X

- (4) **Equipment:** Universal Smart Transmitter type ***UST10***, ***UST11***
- (5) **Manufacturer:** Bopp & Reuther Messtechnik GmbH
- (6) **Address:** 67346 Speyer, Germany (previous address: 68261 Mannheim, Germany)
- (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 DMT-Gesellschaft für Forschung und Prüfung mbH, 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 99.2009 EG.
- (9) The Essential Health and Safety Requirements are assured by compliance with:
EN 50014-1992 (VDE 0170/0171 part 1/3.94) and
EN 50020-1994 (VDE 0170/0171 part 7/4.96)
- (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 1/2G EEx ia IIC T4

DMT-Gesellschaft für Forschung und Prüfung mbH

Bochum, dated 26th February 1999

Signed: Dr. Jockers

Signed: Dr. Dill

Certification body

Special services unit

(13) Appendix to

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

DMT 99 ATEX E 014 X

(15) 15.1 Subject and type

Universal Smart Transmitter type ***UST10***, ***UST11***

In the full designation "*" will be replaced by digits and/or letters to mark units of the model that are not relevant to the explosion-protected design.

15.2 Description

The Universal Smart Transmitter type ***UST10***, which is used to transmit measured data from intrinsically-safe measured value sensor circuits to an intrinsically-safe supply and signal circuit, consists of a tube-shaped metal enclosure sealed with screwed covers which contains printed circuit boards with electronic components.

Under one of the covers, which can be fitted with an inspection glass, is an optional LDC display and terminals for the intrinsically-safe measured value sensor circuits; under the other cover are the terminals for the intrinsically-safe supply and signal circuit.

Up to two cable entries for the intrinsically-safe circuits are integrated in the enclosure walls.

The ***UST11*** design of the Universal Smart Transmitter consists of a metal enclosure upper part with an inspection glass in which two printed circuit boards with electronic components are fastened securely.

15.3 Parameters

15.3.1 Supply and signal circuits

For connection to an approved intrinsically-safe 4 – 20 mA current loop
Terminals 1, 2

Voltage	U_i	to	DC	30	V
Current	I_i	to		110	mA
Power	P_i	to		825	mW
Effective internal capacitance	C_i		\leq	34	nF
Effective internal inductance	L_i		\leq	0.6	mH

15.3.2 Sensor circuits for connecting passive sensors;
galvanically connected to the supply and signal circuit

Sensor	Coil	Contact
Terminals	7 and 8	5 and 6
Voltage U_o	1 V	6.6 V
Current I_o	4 mA	23 mA
Power P_o	1 mW	37 mW
max. external capacitance C_o	$\leq 100 \mu\text{F}$	$\leq 22 \mu\text{F}$
Or		
max. external inductance L_o	$\leq 100 \text{ mH}$	$\leq 35 \text{ mH}$
max. external capacitance C_o (mixed interfacing)	$\leq 40 \mu\text{F}$	$\leq 0.9 \mu\text{F}$
max. external inductance L_o	$\leq 100 \text{ mH}$	$\leq 1.5 \text{ mH}$
inductance resistance ratio (L_o/R_o)	40.5 mH/ Ω	0.93 mH/ Ω

15.3.3 The following temperature range applies to the Universal Smart Transmitter type ***UST10*** or type ***UST11***:

$$-20 \text{ }^\circ\text{C} \leq T_a \leq +70 \text{ }^\circ\text{C}$$

(16) Test and assessment report

BVS PP 99.2009 EG, dated 26.02.1999

(17) Special conditions for safe use

17.1 The Universal Smart Transmitter type ***UST10*** or type ***UST11*** is suitable for use in a temperature range of -20 °C to +70 °C.

17.2 The Universal Smart Transmitter type ***UST11*** must be installed in a suitable enclosure or enclosure holder which guarantees type of protection IP 20 at least.

17.3 The internal wiring must satisfy the conditions of Section 6.4.11 of EN 50020

- 17.4 The Universal Smart Transmitter type ***UST11*** must be installed in such a way that the clearances between bare connection facilities and metallic enclosure parts must be min. 3 mm, and between such connection facilities and bare parts of non-intrinsically safe current circuits must correspond at least to the requirements of the values shown in Table 4 of EN 50020.

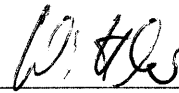
We confirm the correctness of the translation from the German original.
In the case of arbitration only the German wording shall be valid and binding.

44809 Bochum, 22.03.2010
BVS-Scha/Ar E 0490/10

DEKRA EXAM GmbH



Certification body



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 99 ATEX E 014 X

Equipment: Universal Smart Transmitter type ***UST10***, ***UST11***
Manufacturer: Bopp & Reuther Messtechnik GmbH
Address: 67346 Speyer, Germany (previous address: 68261 Mannheim, Germany)

Description

The universal smart transmitter may also be manufactured in accordance with the descriptive documents referred to the test and assessment report no. BVS PP 99.2009 EC / N1 and is then given the designation:

Universal smart transmitter type ***USTI***

Electrical, mechanical and thermal parameters

- Supply and signal circuit
For connection to an approved intrinsically safe 4 - 20 mA current loop
Terminals 1, 2

Voltage	U_i	DC	30	V
Current	I_i		110	mA
Power	P_i		825	mW
Effective internal capacitance	C_i	<	34	nF
Effective internal inductance	L_i	<	0.6	mH

2. Pick-up circuits (types of protection EEx ia IIC) for connecting passive pick-ups; galvanically connected with the supply and signal circuit.

Pick-up	Inductor	Contact
Terminals	7 and 8	5 and 6
Voltage U_o	1 V	6.6 V
Current I_o	4 mA	23 mA
Power P_o	1 mW	37 mW
Max. external capacitance C_o	$\leq 100 \mu\text{F}$	$\leq 22 \mu\text{F}$
or		
Max. external inductance L_o	$\leq 1 \text{ H}$	$\leq 35 \text{ mH}$
Max. external capacitance C_o (combined connection)	$\leq 4 \mu\text{F}$	$\leq 0.9 \mu\text{F}$
Max. external inductance L_o	$\leq 1 \text{ H}$	$\leq 1.5 \text{ mH}$
Inductance-resistance ratio (L_o/R_o)	40.5 mH/ Ω	0.93 mH/ Ω

3. Flowing optocoupler output for connection to intrinsically safe circuits
Terminals 3, 4

Voltage	U_i	DC	18	V
Power	P_i		100	mW
Effective internal capacitance	C_i	\leq	16	nF
Effective internal inductance	L_i	\leq	4	μH

- 4 The following ambient temperature range applies to the universal smart transmitter type
USTI:
 $-20 \text{ }^\circ\text{C} \leq T_a \leq +70 \text{ }^\circ\text{C}$

Test and assessment report

BVS PP 99.2009 EG/N1 dated 26.05.2000

Special conditions for safe use

Unchanged

Deutsche Montan Technologie GmbH

Bochum, dated 26th May 2000

Signed: Jockers

Signed: Dill

Certification body

Special services unit

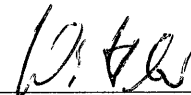
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44809 Bochum, 22.03.2010
BVS-Scha/Ar E 0490/10

DEKRA EXAM GmbH



Certification body



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 99 ATEX E 014 X**

Equipment: Universal Smart Transmitter type ***USTI***
Manufacturer: Bopp & Reuther Messtechnik GmbH
Address: D - 67346 Speyer

Description

The Universal Smart Transmitter can be modified according to the descriptive documents as mentioned in the pertinent test and assessment report and is then given the designation:

Universal smart transmitter type Professional 1

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'
EN 50284:1999 Equipment Group II Category 1G

Electrical, mechanical and thermal parameters

1. Supply and signal circuit
for connection to an approved intrinsically safe 4 - 20 mA current loop
terminals 1, 2

Voltage	U_i	DC	30	V
Current	I_i		110	mA
Power	P_i		825	mW
Effective internal capacitance	C_i	\leq	34	nF
Effective internal inductance	L_i	\leq	0.6	mH

2. Pick-up circuits (types of protection EEx ia IIC) for connecting passive pick-ups; galvanically connected with the supply and signal circuit.

Pick-up	Inductor	Contact
Terminals	7 and 8	5 and 6
Voltage U_o	1 V	6,6 V
Current I_o	4 mA	23 mA
Power P_o	1 mW	37 mW
max. external capacitance C_o	$\leq 100 \mu\text{F}$	$\leq 22 \mu\text{F}$
or		
max. external inductance L_o	$\leq 1 \text{ H}$	$\leq 35 \text{ mH}$
max. external capacitance C_o	$\leq 4 \mu\text{F}$	$\leq 0,9 \mu\text{F}$
(combined connection)		
max. external inductance L_o	$\leq 1 \text{ H}$	$\leq 1,5 \text{ mH}$
Inductance-resistance ratio(L_o/R_o)	40.5 mH/ Ω	0.93 mH/ Ω

3. Floating optocoupler output for connection to intrinsically safe circuits
Terminals 3, 4

Voltage	U_i	DC	18 V
Power	P_i		100 mW
Effective internal capacitance	C_i	\leq	16 nF
Effective internal inductance	L_i	\leq	4 μH

4. The following ambient temperature range applies to the universal smart transmitter type Professional 1:
 $-20^\circ\text{C} \leq T_a \leq +70^\circ\text{C}$

Test and assessment report

BVS PP 99.2009 EG as of 11.11.2004

Special conditions for safe use

- The Universal Smart Transmitter type Professional 1 is suitable for use in a temperature range of -20°C to $+70^\circ\text{C}$.
- The Universal Smart Transmitter type Professional 1 shall be mounted to (installed in) a suitable enclosure or enclosure assembly which guarantees as a minimum degree of protection IP 20 according to EN 60529.
- The internal wiring within this enclosure shall satisfy the requirements in clause 6.4.11 and 7.6.e of EN 50020:2002.
- The Universal Smart Transmitter type Professional 1 shall be installed in such a way that the clearances between bare connection facilities and metallic enclosure parts are min. 3 mm, and comply - as a minimum - with the corresponding values required in table 4 of EN 50020:2002 between connection facilities and bare parts of non-intrinsically safe circuits of other components.

EXAM BBG Prüf- und Zertifizier GmbH

Bochum, dated 11. November 2004

Signed: Dr. Jockers

Signed: Dr. Eickhoff

Certification body

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, 11.11.2004
BVS-Scha/Mi A 20040128

EXAM BBG Prüf- und Zertifizier GmbH



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 99 ATEX E 014 X

Equipment: Universal Smart Transmitter type ***USTI***
Manufacturer: Bopp & Reuther Messtechnik GmbH
Address: 67346 Speyer

Description

The Universal Smart Transmitter type ***USTI*** dealt with in 1st Supplement to DMT 99 ATEX E 014 X 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 60079-0:2006 General requirements
EN 60079-11:2007 Intrinsic safety 'i'
EN 60079-26:2007 Equipment with equipment protection level (EPL) Ga

The marking of the equipment shall include the following:

 II 1/2G Ex ia IIC T4 Ga/Gb

Parameters

No change

Special conditions for safe use

No change

Test and assessment report

BVS PP 99.2009 EG as of 09.11.2010

DEKRA EXAM GmbH

Bochum, dated 09.11.2010

Signed: Dr. Eickhoff

Signed: Dr. Wittler

Certification body

Special services unit

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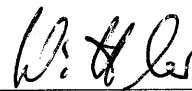
44809 Bochum, 09.11.2010

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DEKRA EXAM GmbH



Certification body



Special services unit