Translation

1 # EC-Type Examination Certificate

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

3 EC-Type Examination Certificate Number: **BVS 04 ATEX E 144 X**

4 Equipment: **Thermometer type *X-****-* resp. Thermometer type BWX-***-***
Measuring insert type *MX-*-* resp. Measuring insert type WMSX-***-***

5 Manufacturer: **LABOM Mess- und Regeltechnik GmbH**

6 Address: **D - 27795 Hude**

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 PP04.2095 EG.

9 The Essential Health and Safety Requirements 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**

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:

To be completed on individual versions according to the marking in table 15.2.

EXAM BBG Prüf- und Zertifizier GmbH
Bochum, dated 18 June 2004

Signed: Dr Jockers
Certification body

Signed: Dr Eickhoff
Special services unit

DEKRA Testing and Certification GmbH, Handwerkstr. 15, 70565 Stuttgart, Germany
Certification body: Dinnendahlstr. 9, 44809 Bochum, Germany
Phone +49.234.3696-400, Fax +49.234.3696-401, e-mail DTC-Certification-body@dekra.com

13 **Appendix to**

14 **EC-Type Examination Certificate**

BVS 04 ATEX E 144 X

15 **Product description**

15.1 **Subject and type**

Thermometer type * X- * * * * - *

Diameter of measuring insert
8 = 8 mm, 6 = 6 mm, 3 = 3 mm

Sensor element
Pt100, Pt1000, Ni100, K = Ni-CrNi, L = Fe-CuNi, J = Fe-CuNi,
N = NiCrSi-NiSi, U = Cu-CuNi, T = Cu-CuNi, E = NiCr-CuNi,
S = Pt10%Rh-Pt, R = Pt13%Rh-Pt, B = Pt30%Rh-Pt6%Rh

Number of sensor elements
1 = single 2 = double

Transmitter (mounted on the connecting head)

O = without		(EEx ia IIC T4/T6)
T = SITRANS TK	type 7NG3122-1JN00	(EEx ia IIC T4)
H = SITRANS TK-H	type 7NG3122-2JN00	(EEx ia IIC T4)
P = SITRANS T3K PA	type 7NG3213-1NN00	(EEx ia IIC T4/T6)
L = SITRANS TK L	type 7NG3122-0JN00	(EEx ia IIC T4)
B = SITRANS TK	type 7NG3122-1JN01	(EEx ia IIC T5/T6)
C = SITRANS TK-H	type 7NG3122-2JN01	(EEx ia IIC T5/T6)
I =	type IPAQ-HX	(EEx ia IIC T4/T6)
A =	type TH 02-Ex	(EEx ia IIC T4/T6)

Building type of protective fittings
E = screw-in fittings, F = flanged fittings,
A = flanged fittings without protective sheath,
O = without protective sheath

Sensor type
W = resistance thermometer, T = thermocouple

Thermometer type BWX- * * * - *

Diameter of measuring insert
8 = 8 mm, 6 = 6 mm, 3 = 3 mm

Sensor element
Pt100, Pt1000

Number of sensor elements
1 = single 2 = double

Building type of protective fittings
E = screw-in fittings
F = flanged fittings

DEKRA Testing and Certification GmbH, Handwerkstr. 15, 70565 Stuttgart, Germany
Certification body: Dinnendahlstr. 9, 44809 Bochum, Germany
Phone +49.234.3696-400, Fax +49.234.3696-401, e-mail DTC-Certification-body@dekra.com

Measuring insert type *MX- * * * - *

Diameter of measuring insert
8 = 8 mm, 6 = 6 mm, 3 = 3 mm

Sensor element
Pt100, Pt1000, Ni100, K = Ni-CrNi, L = Fe-CuNi, J = Fe-CuNi,
N = NiCrSi-NiSi, U = Cu-CuNi, T = Cu-CuNi, E = NiCr-CuNi,
S = Pt10%Rh-Pt, R = Pt13%Rh-Pt, B = Pt30%Rh-Pt6%Rh

Number of sensor elements
1 = single 2 = double

Transmitter

R = circular blank (without Transmitter, ceramics socket)		(EEx ia IIC T4/T6)
O = without Transmitter (with ceramics socket)		(EEx ia IIC T4/T6)
T = SITRANS TK	type 7NG3122-1JN00	(EEx ia IIC T4)
H = SITRANS TK-H	type 7NG3122-2JN00	(EEx ia IIC T4)
L = SITRANS TK L	type 7NG3122-0JN00	(EEx ia IIC T4)
B = SITRANS TK	type 7NG3122-1JN01	(EEx ia IIC T5/T6)
C = SITRANS TK-H	type 7NG3122-2JN01	(EEx ia IIC T5/T6)
I =	type IPAQ-HX	(EEx ia IIC T4/T6)
A =	type TH 02-Ex	(EEx ia IIC T4/T6)

Sensor type
W = resistance thermometer, T = thermocouple

Measuring insert type WMSX- * * * - *

Diameter of measuring insert
8 = 8 mm, 6 = 6 mm, 3 = 3 mm

Sensor element
Pt100, Pt1000

Number of sensor elements
1 = single 2 = double

Building type of measuring insert
K = measuring insert with connecting terminals (ceramics socket)
R = measuring insert with circular blank
(without connecting terminals)
S = measuring insert with connector

15.2 Description

The thermometers **type *X-****-*** respectively the thermometers **type BWX-***-*** respectively the measuring inserts **type *MX-***-*** respectively the measuring inserts **type WMSX-***-*** serve the function of recording process temperatures in areas of explosion hazards.

The thermometers **type *X-E***-*** and **type *X-F***-*** are suitable for use in areas marked category II 1/2 G (to be installed in the wall that separates areas of category II 1G, zone 0) and for use in areas of category II 2G.

Marking:

Ex **II 1/2G EEx ia IIC T4** resp. Ex **II 1/2G EEx ia IIC T4/T6** resp. Ex **II 1/2G EEx ia IIC T5/T6**

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The thermometers **type *X-A***-*** and **type *X-O***-*** as well as the measuring inserts **type *MX-***-*** and measuring inserts **type WMSX-***-*** are suitable for use in areas marked category II 2G.

Marking:

II 2G EEx ia IIC T4 bzw. **II 2G EEx ia IIC T4/T6** bzw. **II 2G EEx ia IIC T5/T6**

The thermometers **type BWX-***-*** are suitable for use in areas marked category I M2.

Marking:

I M2 EEx ia I

Details - type, marking, ambient temperature range cf. table:

Type	Marking	Ambient temperature range
*X-ET**-*, *X-EH**-*, *X-EL**-*, *X-FT**-*, *X-FH**-*, *X-FL**-*	II 1/2G EEx ia IIC T4	- 40 °C ≤ T_a ≤ + 80 °C
*X-EB**-*, *X-EC**-*, *X-FB**-*, *X-FC**-*	II 1/2G EEx ia IIC T5/T6	- 40 °C ≤ T_a ≤ + 85 °C (T5) - 40 °C ≤ T_a ≤ + 50 °C (T6)
*X-EI**-*, *X-EA**-*, *X-FI**-*, *X-FA**-*	II 1/2G EEx ia IIC T4/T6	- 40 °C ≤ T_a ≤ + 80 °C (T4) - 40 °C ≤ T_a ≤ + 50 °C (T6)
*X-EP**-*, *X-EO**-*, *X-FP**-*, *X-FO**-*	II 1/2G EEx ia IIC T4/T6	- 40 °C ≤ T_a ≤ + 80 °C (T4) - 40 °C ≤ T_a ≤ + 60 °C (T6)
*X-AT**-*, *X-AH**-*, *X-AL**-*, *X-OT**-*, *X-OH**-*, *X-OL**-*, *MX-T**-*, *MX-H**-*, *MX-L**-*	II 2G EEx ia IIC T4	- 40 °C ≤ T_a ≤ + 80 °C
*X-AB**-*, *X-AC**-*, *X-OB**-*, *X-OC**-*, *MX-B**-*, *MX-C**-*	II 2G EEx ia IIC T5/T6	- 40 °C ≤ T_a ≤ + 85 °C (T5) - 40 °C ≤ T_a ≤ + 50 °C (T6)
*X-AI**-*, *X-AA**-*, *X-OI**-*, *X-OA**-*, *MX-I**-*, *MX-A**-*, WMSX-***-*	II 2G EEx ia IIC T4/T6	- 40 °C ≤ T_a ≤ + 80 °C (T4) - 40 °C ≤ T_a ≤ + 50 °C (T6)
*X-AP**-*, *X-AO**-*, *X-OP**-*, *X-OO**-*, *MX-O**-*, *MX-R**-*	II 2G EEx ia IIC T4/T6	- 40 °C ≤ T_a ≤ + 80 °C (T4) - 40 °C ≤ T_a ≤ + 60 °C (T6)
BWX-***-*	I M2 EEx ia I	- 40 °C ≤ T_a ≤ + 80 °C

DEKRA Testing and Certification GmbH, Handwerkstr. 15, 70565 Stuttgart, Germany
Certification body: Dinnendahlstr. 9, 44809 Bochum, Germany
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The sensor element (resistive element or thermocouple) is placed on the tip of a metal tube with a length of up to 6,000 mm. If types *X-E***-*, *X-F***-*, BWX-E**-* or BWX-F**-* are used, the metal tubes are placed into a protective sheath of appropriate length.

For purpose of thermal decoupling, the protective sheath (or neck tube) is provided with sufficient length outside the process, and by types *X-****-* feature a screwed-on connecting head at their free ends.

The types *X-*T**-*, *X-*H**-*, *X-*L**-*, *X-*P**-*, *X-*B**-*, *X-*C**-*, *X-*I**-* and *X-*A**-* have appropriate transmitters installed into their connecting heads (see parameters).

The types *MX-T**-*, *MX-H**-*, *MX-L**-*, *MX-B**-*, *MX-C**-*, *MX-I**-* and *MX-A**-* have appropriate transmitters installed instead of connecting terminals (see parameters).

15.3 Parameters

15.3.1 Thermometer type *X-*T**-* and measuring insert type *MX-T**-*
(connected via a transmitter (installed or annexed) SITRANS TK type 7NG3122-1JN00, terminals 1 and 2, certificate number: DEMKO 99 ATEX 126892 X)

supply/data circuit (electrical data complying with DEMKO 99 ATEX 126892 X)

Maximum input voltage	U_i	DC	30	V
Maximum input current	I_i		100	mA
Maximum input power	P_i		750	mW
Maximum internal capacity	C_i		2	nF
Maximum internal inductance	L_i		15	µH

15.3.2 Thermometer type *X-*H**-* and measuring insert type *MX-H**-*
(connected via a transmitter (installed or annexed) SITRANS TK-H type 7NG3122-2JN00, terminals 1 and 2, certificate number: DEMKO 99 ATEX 126893 X)

supply/data circuit (electrical data complying with DEMKO 99 ATEX 126893 X)

Maximum input voltage	U_i	DC	30	V
Maximum input current	I_i		100	mA
Maximum input power	P_i		750	mW
Maximum internal capacity	C_i		2	nF
Maximum internal inductance	L_i		15	µH

15.3.3 Thermometer type *X-*P**-*
(connected via a installed transmitter SITRANS T3K PA type 7NG3213-1NN00, terminals 5 and 6, certificate number: ZELM 99 ATEX 0001)

supply/signalling circuit (electrical data complying with ZELM 99 ATEX 0001)

		FISCO power supply	linear barrier	
Maximum input voltage	U_i	17,5 V	24	V
Maximum input power	P_i	--	1,2	W
Maximum internal capacity	C_i		1,1	nF
Maximum internal inductance	L_i		5,5	µH

DEKRA Testing and Certification GmbH, Handwerkstr. 15, 70565 Stuttgart, Germany
Certification body: Dinnendahlstr. 9, 44809 Bochum, Germany
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15.3.4 Thermometer type *X-*L**-* and measuring insert type *MX-L**-*
(connected via a transmitter (installed or annexed) SITRANS TK-L type 7NG3122-0JN00,
certificate number: DEMKO 01 ATEX 129483 X)

supply/data circuit (electrical data comply with DEMKO 01 ATEX 129483 X)

Maximum input voltage	U_i	DC	28	V
Maximum input current	I_i		0,1	A
Maximum input power	P_i		0,7	W
Maximum internal capacity	C_i		10	nF
Maximum internal inductance	L_i		10	µH

15.3.5 Thermometer type *X-*B**-*, type *X-*C**-* and measuring insert type *MX-B**-*, type *MX-C**-*
(connected via a transmitter (installed or annexed) SITRANS TK Typ 7NG3122-1JN01 or
Transmitter SITRANS TK-H Typ 7NG3122-2JN01, terminals 1 and 2,
certificate number: DEMKO 03 ATEX 134603X)

supply/data circuit (electrical data comply with DEMKO 03 ATEX 134603X)

Maximum input voltage	U_i	DC	30	V
Maximum input current	I_i		100	mA
Maximum input power	P_i		750	mW
Maximum internal capacity	C_i		5	nF
Maximum internal inductance	L_i		15	µH

15.3.6 Thermometer type *X-*I**-* and measuring insert type *MX-I**-*
(connected via a transmitter (installed or annexed) type IPAQ-HX,
certificate number: DEMKO 02 ATEX 132033)

supply/data circuit (electrical data comply with DEMKO 02 ATEX 132033)

Maximum input voltage	U_i	DC	30	V
Maximum input current	I_i		100	mA
Maximum input power	P_i		0,9	W
Maximum internal capacity	C_i		0	µF
Maximum internal inductance	L_i		0	mH

15.3.7 Thermometer type *X-*A**-* and measuring insert type *MX-A**-*
(connected via a transmitter (installed or annexed) type TH 02-Ex,
terminals + and -, certificate number: PTB 99 ATEX 2139 X)

supply/data circuit (electrical data comply with PTB 99 ATEX 2139 X)

Maximum input voltage	U_i	DC	29,4	V
Maximum input current	I_i		130	mA
Maximum input power	P_i		0,8	W
Maximum internal capacity	C_i		15	nF
Maximum internal inductance	L_i		220	µH

DEKRA Testing and Certification GmbH, Handwerkstr. 15, 70565 Stuttgart, Germany
Certification body: Dinnendahlstr. 9, 44809 Bochum, Germany
Phone +49.234.3696-400, Fax +49.234.3696-401, e-mail DTC-Certification-body@dekra.com

15.3.8 Thermometer type *X-*O**-*, measuring insert type *MX-O**-*, measuring insert type *MX-R**-* and measuring insert type WMSX-***-*

sensor circuit

Maximum input voltage	U_i	DC	30	V
Maximum input power	P_i		200	mW
Maximum internal capacity	C_i	negligible		
Maximum internal inductance	L_i	negligible		

15.3.9 Thermometer type BWX-***-*

sensor circuit

Maximum input voltage	U_i	DC	15	V
Maximum internal capacity	C_i	negligible		
Maximum internal inductance	L_i	negligible		

15.3.10 Thermal parameters

15.3.10.1 Ambient temperature range; temperature class

For thermometer type *X-*I**-* and measuring insert type *MX-I**-* as well as thermometer type *X-*A**-* and measuring insert type *MX-A**-* as well as measuring insert type WMSX-***-*:
temperature class T4, ambient temperature range: - 40 °C bis + 80 °C
temperature class T6, ambient temperature range: - 40 °C bis + 50 °C

For thermometer type *X-*T**-* and measuring insert type *MX-T**-* as well as thermometer Typ *X-*H**-* and measuring insert type *MX-H**-* as well as thermometer Typ *X-*L**-* and measuring insert type *MX-L**-*
temperature class T4, ambient temperature range: - 40 °C bis + 80 °C

For thermometer type *X-*P**-* as well as thermometer Typ *X-*O**-*
and measuring insert type *MX-O**-* as well as measuring insert type *MX-R**-*
temperature class T4, ambient temperature range: - 40 °C bis + 80 °C
temperature class T6, ambient temperature range: - 40 °C bis + 60 °C

For thermometer type *X-*B**-* and thermometer Typ *X-*C**-* as well as measuring insert type *MX-B**-* and measuring insert type *MX-C**-*
temperature class T5, ambient temperature range: - 40 °C bis + 85 °C
temperature class T6, ambient temperature range: - 40 °C bis + 50 °C

For thermometer type BWX-***-*
ambient temperature range: - 40 °C bis + 80 °C

15.3.10.2 Process temperature (depending on model and other process factors)

For resistance thermometers	- 200 °C bis + 600 °C
For thermocouples	- 50 °C bis + 900 °C

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Phone +49.234.3696-400, Fax +49.234.3696-401, e-mail DTC-Certification-body@dekra.com

16 **Test and assessment report**

BVS PP 04.2095 EG, as of 18.06.2004

17 **Special conditions for safe use**

17.1 The thermocouples and measuring inserts are suitable for use within the following ambient temperature range:

For thermometer type *X-*I**-* and measuring insert type *MX-I**-* as well as thermometer type *X-*A**-* and measuring insert type *MX-A**-* as well as measuring insert type WMSX-***-*:
temperature class T4, ambient temperature range: - 40 °C bis + 80 °C
temperature class T6, ambient temperature range: - 40 °C bis + 50 °C

For thermometer type *X-*T**-* and measuring insert type *MX-T**-* as well as thermometer Typ *X-*H**-* and measuring insert type *MX-H**-* as well as thermometer Typ *X-*L**-* and measuring insert type *MX-L**-*
temperature class T4, ambient temperature range: - 40 °C bis + 80 °C

For thermometer type *X-*P**-* as well as thermometer Typ *X-*O**-*
and measuring insert type *MX-O**-* as well as measuring insert type *MX-R**-*
temperature class T4, ambient temperature range: - 40 °C bis + 80 °C
temperature class T6, ambient temperature range: - 40 °C bis + 60 °C

For thermometer type *X-*B**-* and thermometer Typ *X-*C**-* as well as measuring insert type *MX-B**-* and measuring insert type *MX-C**-*
temperature class T5, ambient temperature range: - 40 °C bis + 85 °C
temperature class T6, ambient temperature range: - 40 °C bis + 50 °C

For thermometer type BWX-***-*
ambient temperature range: - 40 °C bis + 80 °C

In case that process temperatures measured deviate from these parameters, the ambient temperature range and the temperature class defined refer only to either the connecting head or the connecting terminals; the impact of the process temperature on the temperature of the neck tube has to be considered separately in the thermometer or the measuring insert respectively.

17.2 Appropriate measures, e.g. an adequate choice of neck tube length, shall assure that the temperatures of the connecting head of type *X-****-* and type BWX-***-* as well as that of the connecting terminals/transmitter of type *MX-***-* and type WMSX-***-* are decoupled from the process temperature as such.

17.3 The manufacturer's instructions regarding admissible process conditions shall be adhered to.

17.4 The restrictions and requirements for safe use mentioned in the certificates provided on each transmitter shall be adhered to.

DEKRA Testing and Certification GmbH, Handwerkstr. 15, 70565 Stuttgart, Germany
Certification body: Dinnendahlstr. 9, 44809 Bochum, Germany
Phone +49.234.3696-400, Fax +49.234.3696-401, e-mail DTC-Certification-body@dekra.com

17.5 Measuring inserts type *MX-***-* and type WMSX-***-* are also subject to the following:

The measuring insert has to be installed into an enclosure that guarantees at least the type of protection IP20.
The internal wiring has to meet the requirements of paragraph 6.4.11 of EN 50020.
The installation has to be carried out in a manner that the air gaps between blank parts of intrinsically safe circuits and metallic enclosure parts are at least 3 mm.

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 Testing and Certification GmbH
Bochum, 2024-11-28
BVS-Rip/MGR

Managing Director

DEKRA Testing and Certification GmbH, Handwerkstr. 15, 70565 Stuttgart, Germany
Certification body: Dinnendahlstr. 9, 44809 Bochum, Germany
Phone +49.234.3696-400, Fax +49.234.3696-401, e-mail DTC-Certification-body@dekra.com