

## Translation

# (1) 1<sup>st</sup> 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 07 ATEX E 001 X**
- (4) Equipment: **Electrical Thermometer type ALEXI-\*\*\*\*\* / type LEXI-\*\*\*\*\***
- (5) Manufacturer: **Herth GmbH**
- (6) Address: **Landwehrstraße 86-88, 59368 Werne, 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 07.2065 EG.
- (9) The Essential Health and Safety Requirements are assured by compliance with:
- EN 60079-0:2012 General requirements**  
**EN 60079-11:2012 Intrinsic safety "i"**  
**EN 60079-26:2007 Equipment with equipment (EPL) Ga**  
**EN 50303:2000 Equipment Group I Category M1**
- (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:



**I or II** extended with the application category- and type of protection marking; see table in clause 1

DEKRA EXAM GmbH  
Bochum, dated 2014-02-26

Signed: Simanski

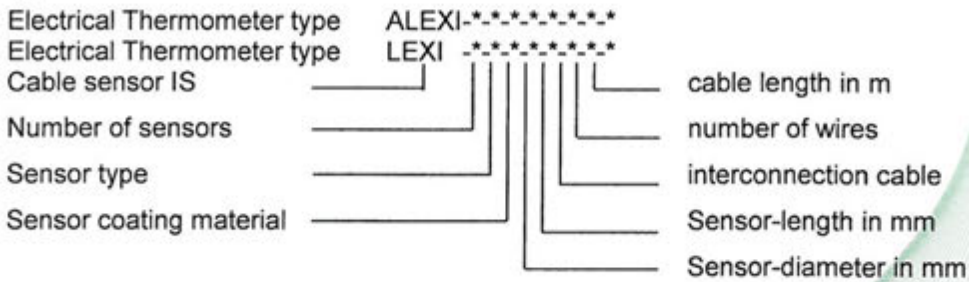
Certification body

Signed: Dr. Wittler

Special services unit

- (13) Appendix to
- (14) **1<sup>st</sup> Supplement to the EC-Type Examination Certificate  
BVS 07 ATEX E 001 X**
- (15) 15.1 Subject and type

Type code



Sensor type:	Resistance-thermometer:	Marking letter	Pt...
		Marking letter	Ni...
		Marking letter	PTC
		Marking letter	NTC

Thermocouple (thermoelectric couple): marking letter "K, J, L, N, T, U, S, R, B, E"

Coating material:	stainless steel:	Marking letter "A"
	Inconel:	Marking letter "B"
	special metallic material:	Marking letter "C"
	ceramic material:	Marking letter "D"

Interconnection cable:	Thermo plastics (PVC):	Marking letter "A"
	Fluor-polymer (PTFE, ETFE, Teflon):	Marking letter "B"
	Silicon, Silicon material:	Marking letter "C"
	Inorganic isolating material (glass silk, ceramic):	Marking letter "D"

Additional marking for shield, screen:	
Copper wire mesh (screen):	Marking letter "Cu"
Steel wire mesh (shield):	Marking letter "S"

The allocation of different versions of the electrical thermometer to equipment category and marking according to the applied standards is listed in the following table:

Electrical Thermometer type	Equipment category	Marking according to applied standards
ALEXI-*Pt.../Ni.../PTC/NTC-***** ALEXI-*K/J/L/N/T/E/S/B/U/R-***** ALEXI-* Pt.../Ni.../PTC/NTC-***** ALEXI-*K/J/L/N/T/E/S/B/U/R-***** LEXI-* Pt.../Ni.../PTC/NTC-***** LEXI-*K/J/L/N/T/E/S/B/U/R-***** LEXI-* Pt.../Ni.../PTC/NTC-***** LEXI-*K/J/L/N/T/E/S/B/U/R-*****	1/2G M2	Ex ia IIC T3 / T4 / T5 / T6 Ga/Gb Ex ia I Mb
ALEXI-* Pt.../Ni.../PTC/NTC-*****S-* ALEXI-*K/J/L/N/T/E/S/B/U/R-*****S-* LEXI-* Pt.../Ni.../PTC/NTC-*****S-* LEXI-*K/J/L/N/T/E/S/B/U/R-*****S-*	1G M1	Ex ia IIC T3 / T4 / T5 / T6 Ga Ex ia I Ma
ALEXI-* Pt.../Ni.../PTC/NTC-*****S-* LEXI-* Pt.../Ni.../H...-*****S-*	1D	Ex ia IIIC T135 °C Da
ALEXI-*K/J/L/N/T/E/S/B/U/R-*****S-* LEXI-*K/J/L/N/T/E/S/B/U/R-*****S-*		Ex ia IIIC T100 °C Da



**15.2 Description**

Note: The existing description (15.2.1) is valid without change in addition with the comments to the modifications in (15.2.2).

**15.2.1**

The Electrical Thermometer type ALEXI-\*-\*-\*-\*-\* consist of a protective enclosure of various size and shape containing up to two temperature depending resistors / semiconductors or thermocouples embedded in heat proof isolating material (internal wiring mineralised).

The Electrical Thermometer type LEXI-\*-\*-\*-\*-\* consist of a protective enclosure of various size and shape, containing up to two temperature depending resistors / semiconductors or thermocouples embedded in heat proof isolating material.

The interconnection cable for the IS measuring circuit in 2-wire, 3-wire or 4-wire is permanently connected to the metallic tube.

The Electrical Thermometer type ALEXI-\*-\*-\*-\*-\* / type LEXI-\*-\*-\*-\*-\* contains only components that do not affect intrinsic safety of the interconnected measuring circuit. (Accessory for use in intrinsically safe electric systems of Group I or simple apparatus for use in Group II applications respectively).

**15.2.2**

Reason for this supplement is the update to the current standards and upgrading of the label (EPL).

The measured temperature range is extended.

The following notes are omitted: "positive temperature coefficient" and marking letter "H" for sensor type; but this notes are added: "PTC" and "NTC" for semiconductor sensor with positive and negative coefficient.

Ceramic is used as additional coating material.

Marking letters of thermocouple are supplemented by types B, E and U.

**15.3 Parameters**

15.3.1 Versions intended for use in areas requiring category 1G, 2G, M1 and M2 equipment 2-wire, 3-wire, 4-wire or „x“-times 2-wire, „x“-times 3-wire, „x“-times 4-wire measuring circuits

Voltage	$U_i$	AC/DC	30	V
Current	$I_i$		100	mA
Power	$P_i$		600	mW
Effective internal capacitance (wire/wire)	$C_i$		150	pF/m *)
(wire/screen)	$C_i$		200	pF/m *)
Effective internal inductance	$L_i$		15	µH/m *)

\*) Parameters of the permanently connected cable

15.3.2.1 Ambient temperature range:

- Thermometer fitted with thermocouples
  - 50 °C ≤ T<sub>a</sub> ≤ 80 °C (T6)
  - 50 °C ≤ T<sub>a</sub> ≤ 100 °C (T5)
  - 50 °C ≤ T<sub>a</sub> ≤ 135 °C (T4) and Group I

15.3.2.2 Thermometer fitted with measuring resistors / semiconductor-sensor

Temperature class	Resistance thermometers: maximum ambient temperature with regard to P <sub>i</sub>			
	Ta bei 100 mW	Ta bei 200 mW	Ta bei 400 mW	Ta bei 600 mW
T6	74 °C	65 °C		
T5	95 °C	82 °C	53 °C	
T4	130 °C	117 °C	108 °C	91 °C
T3	195 °C	180 °C	165 °C	155 °C

The values specified for T4 also apply to Group I. Lower temperature limit see 15.3.2.3

**15.3.2.3**

- Temperature measuring range:
  - Thermocouple -50 °C ≤ T ≤ 450 °C
  - Resistance thermometers -200 °C ≤ T ≤ 450 °C

15.3.3 Isolation of the measuring circuit versus sensor coating (all versions)

Versions Ø less than 1 mm:	DC 60 V	
Versions Ø > 1 mm < 3 mm:	DC 100 V, 2 thermoelectric couples:	DC 60 V
Versions Ø > 3 mm < 7.9 mm:	DC 500 V, 2 thermoelectric couples:	DC 250 V,
	3 thermoelectric couples:	DC 100 V
Versions Ø ≥ 8 mm:	DC 500 V, 2 thermoelectric couples:	DC 500 V,
	3 thermoelectric couples:	DC 100 V

15.3.4 Versions intended for use in areas requiring category 1D or 2D equipment

15.3.4.1 Versions fitted with one or „x“ Pt..., Ni... or PTC, NTC

(type ALEXI-\* Pt.../Ni.../PTC/NTC-\*-\*-\*S-\* / LEXI-\* Pt.../Ni.../PTC/NTC-\*-\*-\*S-\*  
\*-\*)

2-wire, 3-wire, 4-wire or „x“-times 2-wire, „x“-times 3-wire, „x“-times 4-wire measuring circuit

Voltage	U <sub>i</sub> AC/DC	30	V
Power	P <sub>i</sub>	550/650/750 mW	) <sup>2</sup>
Effective internal capacitance (wire/wire)	C <sub>i</sub>	150	pF/m ) <sup>1</sup>
(wire/screen)	C <sub>i</sub>	200	pF/m ) <sup>1</sup>
Effective internal inductance	L <sub>i</sub>	15	µH/m ) <sup>1</sup>

Ambient temperature range:	-40 °C ≤ T <sub>a</sub> ≤ +40 °C (P <sub>i</sub> = 750 mW)
	-40 °C ≤ T <sub>a</sub> ≤ +70 °C (P <sub>i</sub> = 650 mW)
	-40 °C ≤ T <sub>a</sub> ≤ +100 °C (P <sub>i</sub> = 550 mW)

)<sup>1</sup> Parameters of the permanently connected cable

)<sup>2</sup> in case of „x“-times Pt..., Ni... or PTC, NTC sum of values

15.3.4.2 Versions fitted with one or „x“ thermocouples

(type ALEXI-\* K/J/L/N/T/E/S/B/U/R-\*-\*-\*S-\* / LEXI-\* K/J/L/N/T/E/S/B/U/R-\*-\*-\*S-\*  
\*-\*)

Voltage	U <sub>i</sub> AC/DC	30	V
	U <sub>o</sub> (200 °C)	15	mV
Power	P <sub>i</sub>	550/650/750 mW	
Effective internal capacitance (wire/wire)	C <sub>i</sub>	150	pF/m ) <sup>1</sup>
(wire/screen)	C <sub>i</sub>	200	pF/m ) <sup>1</sup>
Effective internal inductance	L <sub>i</sub>	15	µH/m ) <sup>1</sup>

Ambient temperature range:	-50 °C ≤ T <sub>a</sub> ≤ +40 °C (P <sub>i</sub> = 750 mW)
	-50 °C ≤ T <sub>a</sub> ≤ +70 °C (P <sub>i</sub> = 650 mW)
	-50 °C ≤ T <sub>a</sub> ≤ +100 °C (P <sub>i</sub> = 550 mW)

)<sup>1</sup> Parameters of the permanently connected cable

(16) Test and Assessment Report

BVS PP 07.2065 EG as of 2014-02-26

(17) Special conditions for safe use

Manufacturer's technical information related to use of the Electrical Thermometers in contact with aggressive / corrosive media shall be observed.

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, 2014-02-26  
BVS-Woh/Scha/Ma A20120427



Certification body



Special services unit