



(1) **EC-TYPE-EXAMINATION CERTIFICATE**
(Translation)

(2) Equipment and Protective Systems Intended for Use in Potentially Explosive Atmospheres - **Directive 94/9/EC**



(3) EC-type-examination Certificate Number:

PTB 05 ATEX 2012 X

(4) Equipment: Digital pressure gauge, type LEX 1 Ei or LEO RECORD Ei

(5) Manufacturer: Keller AG für Druckmesstechnik

(6) Address: St. Gallerstraße 119, 8404 Winterthur, Switzerland

(7) This equipment and any acceptable variation thereto are specified in the schedule to this certificate and the documents therein referred to.

(8) The Physikalisch-Technische Bundesanstalt, notified body No. 0102 in accordance with Article 9 of the Council Directive 94/9/EC 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 confidential report PTB Ex 05-25018 .

(9) Compliance with the Essential Health and Safety Requirements has been assured by compliance with:
EN 50014:1997 + A1 + A2 **EN 50020:2002**

(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 the 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 2 G EEx ia IIC T6

Zertifizierungsstelle Explosionsschutz
By order:

Braunschweig, April 21, 2005

(signature)

Dr.-Ing. U. Johannsmeyer
Regierungsdirektor

3 pages, correct and complete as regards content.
By order:

Dr.-Ing. Johannsmeyer Braunschweig, November 19, 2008
Direktor und Professor

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(13)

SCHEDULE

(14)

EC-TYPE-EXAMINATION CERTIFICATE PTB 05 ATEX 2012 X

(15) Description of equipment

The digital pressure gauge, type LEX 1 Ei or LEO RECORD Ei is a battery-powered pressure gauge and serves for the measurement and storage of pressures.

For relationship between type of equipment, ambient temperature and temperature class, reference is made to the following table:

	Ambient temperature	Temperature class
LEX 1 Ei	-20 up to +65 °C	T6
LEO RECORD Ei	-20 up to +60 °C	T4

Electrical data

Internal supply LEX 1 Ei

3,3 V (DC); type of battery approved for power supply:
Renata CR 2430, size: coin cell

Internal supply LEO RECORD Ei

3,6 V (DC); type of battery approved for power supply:
Sonnenschein SL-760, size: AA

Interface RS485

Only for connection outside of the hazardous area.
Safety-related maximum voltage $U_m = 5,7$ V

(16) Test report PTB Ex 05-25018

(17) Special conditions for safe use

1. The maximum permissible ambient temperature range for the digital pressure gauge depends on the type of equipment and shall be taken from the above table.
2. The temperature class of the digital pressure gauge depends on the type of equipment and shall be taken from the above table.
3. The RS485 digital interface of the digital pressure gauge shall be connected to the pressure gauge and operated only outside of the hazardous area. A safety-related maximum voltage of 5.7 V shall be guaranteed for the operation of the interface.
4. The batteries of the digital pressure gauge may be replaced inside the hazardous area.

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(18) Essential health and safety requirements

met by compliance with the standards mentioned above

Zertifizierungsstelle Explosionsschutz

Braunschweig, April 21, 2005

By order:

(signature)

Dr.-Ing. U. Johannsmeyer
Regierungsdirektor

1. SUPPLEMENT

according to Directive 94/9/EC Annex III.6

to EC-TYPE-EXAMINATION CERTIFICATE PTB 05 ATEX 2012 X

(Translation)

Equipment: Digital pressure gauge, type LEX 1 Ei or LEO RECORD Ei with capacitive sensor

Marking:  II 2 G EEx ia IIC T4

Manufacturer: Keller AG für Druckmesstechnik

Address: St. Gallerstraße 119, 8404 Winterthur, Switzerland

Description of supplements and modifications

The digital pressure gauge, type LEX 1 Ei or LEO RECORD Ei is a battery-powered pressure gauge and serves for the measurement and storage of pressures. Alternatively, the digital pressure gauge can also be operated with a capacitive sensor.

All specifications implemented so far and the special conditions apply without changes.

Test report: PTB Ex 07-27233

Zertifizierungsstelle Explosionsschutz

Braunschweig, July 23, 2007

By order:

(signature)

Dr.-Ing. U. Johannsmeyer
Direktor und Professor

1 page, correct and complete as regards content.

By order:

Dr.-Ing. Johannsmeyer
Direktor und Professor

Braunschweig, November 19, 2008

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Physikalisch-Technische Bundesanstalt

Braunschweig und Berlin

2nd SUPPLEMENT

according to Directive 94/9/EC Annex III.6

to EC-TYPE-EXAMINATION CERTIFICATE PTB 05 ATEX 2012 X

(Translation)

Equipment: Digital manometer type LEX 1 Ei resp. LEO RECORD Ei

Marking:  II 2 G EEx ia IIC T4

Manufacturer: Keller AG

Address: St. Gallerstrasse 119, 8404 Winterthur, Switzerland

Description of supplements and modifications

The digital manometer type LEX 1 Ei resp. LEO RECORD Ei may be produced with the modifications according to the documents specified in the Assessment and Test Report mentioned below. The modifications refer to the internal structure.

The basis for the standards has changed as follows:

Applied standards

EN 60079-0:2006	EN 60079-11:2007
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The marking according the above mentioned standards shall include the following details:

 II 2 G Ex ia IIC T4 resp. T6

	Ambient Temperature	Temperature Class
LEX 1 Ei	-20 up to +65 °C	T6
LEO RECORD Ei	-20 up to +60 °C	T4

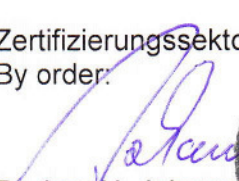
All other specifications made so far are valid without changes.

Assessment and test report: PTB Ex 09-29165

Zertifizierungssektor Explosionschutz

By order:

Braunschweig, September 29, 2009


Dr.-Ing. U. Johannsmeyer
Direktor und Professor



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EC-type-examination Certificates without signature and official stamp shall not be valid. The certificates may be circulated only without alteration. Extracts or alterations are subject to approval by the Physikalisch-Technische Bundesanstalt. In case of dispute, the German text shall prevail.

3. SUPPLEMENT

according to Directive 94/9/EC Annex III.6

to EC-TYPE-EXAMINATION CERTIFICATE PTB 05 ATEX 2012 X

(Translation)

Equipment: Digital manometer type LEO RECORD Ei resp. LEX 1 Ei

Marking:  II 2 G Ex ia IIC T6

Manufacturer: Keller AG

Address: St. Gallerstrasse 119, 8404 Winterthur, Switzerland

Description of supplements and modifications

The digital manometer type LEX 1 Ei or LEO RECORD Ei may be produced with the modifications according to the documents specified in the Assessment and Test Report mentioned below. The modifications refer to the internal structure, the use of an alternative battery, the connection of a PT1000 temperature sensor and the connection to an interface outside of the hazardous area.

As an alternative, the sensor may also be installed separately and be connected via a cable with the evaluation electronics.

The electrical data of the digital pressure gauge

For relationship between the type, the ambient temperature and the temperature class, reference is made to the following table.

Digital manometer type	Ambient temperature	Temperature class
LEX 1 Ei	-20 up to +65 °C	T6
LEO RECORD Ei	-20 up to +60 °C	T4

Electrical data

Internal supply LEX 1 Ei 3.3 V (DC); type of battery approved for power supply: Renata CR2430 or CR2430MFR, size coin cell

Internal supply LEO RECORD Ei 3.6 V (DC); type of battery approved for power supply: Sonnenschein/Tadiran SL-760, size AA

Temperature sensor LEO RECORD Ei Only for connection to PT1000 temperature sensor. The maximum permissible thermal resistance of the temperature sensor given by mounting is:
 $R_{th} = 900 \text{ K/W}$

Physikalisch-Technische Bundesanstalt

Braunschweig und Berlin

3. SUPPLEMENT TO EC-TYPE-EXAMINATION CERTIFICATE PTB 05 ATEX 2012 X

Interface RS485
LEX 1 Ei and LEO RECORD Ei

Only for connection outside of the hazardous area. The connected load values shall not exceed:

safety related maximum voltage

$$U_m = 6.3 \text{ V}$$

connected power

$$P < 0.9 \text{ W}$$

Assessment and test report: PTB Ex 10-20247

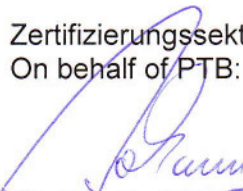
Special conditions

The special conditions read in future as follows.

1. The maximum permissible ambient temperature range for the digital manometer depends on the type and shall be taken from the above table.
2. The temperature class of the digital manometer depends on the type and shall be taken from the above table.
3. The RS485 digital interface of the digital manometer shall be connected to the manometer and operated only outside of the hazardous area. A safety-related maximum voltage of $U_m = 6.3 \text{ V}$ and power of 0.9 W shall not be exceeded.
4. The digital manometer type LEO RECORD Ei may be used alternatively with a temperature sensor e.g. PT1000 including the associated cable. The thermal resistance shall be calculated at the installation and shall not exceed the value of $R_{th} = 900 \text{ K/W}$. The thermal resistance is related to the Temperature Class T4.
5. The batteries of the digital manometer may be replaced inside the hazardous area.

Zertifizierungssektor Explosionsschutz
On behalf of PTB:

Braunschweig, November 25, 2010


Dr.-Ing. U. Johannsmeyer
Direktor und Professor



4. SUPPLEMENT

according to Directive 94/9/EC Annex III.6

to EC-TYPE-EXAMINATION CERTIFICATE PTB 05 ATEX 2012 X

(Translation)

Equipment: Digital manometer type LEX 1 Ei or LEO RECORD Ei

Marking:  II 2 G Ex ia IIC T6

Manufacturer: Keller AG

Address: St. Gallerstrasse 119, 8404 Winterthur, Switzerland

Description of supplements and modifications

The digital manometer type LEX 1 Ei or LEO RECORD Ei may be produced with the modifications according to the documents specified in the Assessment and Test Report mentioned below. The modifications refer to the internal structure. The digital manometer type LEX 1 Ei or LEO RECORD Ei may be used with a PT1000 temperature sensor. The interface shall only be connected outside of the hazardous area. As an alternative, the sensor may be installed separately and be connected via a cable with the evaluation electronics.

The basis for the standards has changed as follows.

Applied standards

EN 60079-0:2012

EN 60079-11:2012

The marking according the above mentioned standards shall include the following details:

 II 2 G Ex ia IIC T6 or T4 Gb

For relationship between type of equipment, ambient temperature and temperature class, reference is made to the following table.

Digital manometer type	Ambient temperature	Temperature class
LEX 1 Ei	-20 up to +65 °C	T6
LEO RECORD Ei	-20 up to +60 °C	T4

Electrical data

Internal supply LEX 1 Ei	3.3 V (DC); type of battery approved for power supply: Renata CR2430 or CR2430MFR, size coin cell
Internal supply LEO RECORD Ei	3.6 V (DC); type of battery approved for power supply: Sonnenschein/Tadiran SL-760, size AA
Temperature sensor LEO RECORD Ei	Only for connection of PT1000 temperature sensor. The maximum permissible thermal resistance of the temperature sensor given by mounting is: $R_{th} = 900 \text{ K/W}$
Interface RS485 LEX 1 Ei and LEO RECORD Ei	Only for connection outside of the hazardous area. The connected loads shall not exceed: safety related maximum voltage $U_m = 6.3 \text{ V}$ connected power $P < 0.9 \text{ W}$

Test report: PTB Ex 13-22131

Special conditions

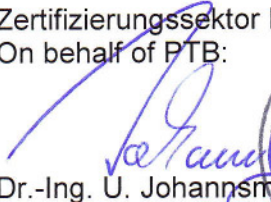
1. The maximum permissible ambient temperature range for the digital manometer depends on the type of equipment and shall be taken from the above table.
2. The temperature class of the digital manometer depends on the type of equipment and shall be taken from the above table.
3. The RS485 digital interface of the digital manometer shall be connected to the manometer and operated only outside of the hazardous area. A safety-related maximum voltage of $U_m = 6.3 \text{ V}$ and power of 0.9 W shall not be exceeded.
4. The digital manometer type LEO RECORD Ei may be used alternatively with a temperature sensor e.g. PT1000 including the associated cable. The thermal resistance shall be calculated by the installation and shall not exceed the value of $R_{th} = 900 \text{ K/W}$. The thermal resistance is related to the Temperature Class T4.

4.. SUPPLEMENT TO EC-TYPE-EXAMINATION CERTIFICATE PTB 05 ATEX 2012 X

5. The batteries of the digital manometer may be replaced inside the hazardous area.

Zertifizierungssektor Explosionsschutz
On behalf of PTB:

Braunschweig, July 18, 2013


Dr.-Ing. U. Johannsmeyer
Direktor und Professor

