Translation

(1) # EC TYPE-EXAMINATION CERTIFICATE

(2) Equipment or protective system intended for use in potentially explosive atmospheres **- Directive 94/9/EC**

(3) EC-Type Examination Certificate Number

TÜV 04 ATEX 2387 X

(4) Equipment: Pressure transmitter PASCAL CV type CVxx

(5) Manufacturer: LABOM Mess- und Regeltechnik GmbH

(6) Address: Im Gewerbepark 13
D-27798 Hude

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

(8) The TÜV NORD CERT GmbH & Co. KG, TÜV CERT-Certification Body, notified body number N° 0032 in accordance with Article 9 of the Council Directive of the EC of March 23, 1994 (94/9/EC), certifies that this equipment or protective system 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 N° 02YEX550613.

(9) Compliance with the Essential Health and Safety Requirements has been assured by compliance with:

EN 50014:1997+A1+A2 EN 50020:2002 EN 50281-1-1:1998 EN 50284:1999

(10) If the sign "X" is placed after the certificate number, it indicates that the equipment or protective system 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 or protective system must include the following:

II 1/2 G EEx ia IIC T6 bzw. II 2 D T60°C IP65

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TÜV CERT-Certification Body
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Hanover, 2004-03-11

TÜV NORD CERT

Head of the
Certification Body

(13) **SCHEDULE**

(14) **EC-TYPE EXAMINATION CERTIFICATE N° TÜV 04 ATEX 2387 X**

(15) Description of equipment

The pressure transmitter PASCAL CV type CVxx is used for the pressure measurement of gases, vapours and liquids in vessels and pipes. The housing may be mounted in explosion hazardous areas that require apparatus of the category 2. The pressure port may be mounted in explosion hazardous areas that require apparatus of the category 1.
The pressure transmitter PASCAL CV type CVxx may also be erected in explosion hazardous areas, which require apparatus of category 2D.
The permissible temperatures, the temperature classes resp. the maximum surface temperature as well as the markings have to be taken from the following tables:

Table 1

Pressure transmitter with marking II 1/2 G		
Temperature class	Ambient temperature	Medium temperature
T6	-20 ... +60 °C	-20 ... +60 °C
T5	-20 ... +80 °C	-20 ... +60 °C
T4	-20 ... +85 °C	-20 ... +60 °C

Extension of the temperature range: see (17) "Special conditions for safe use"

Table 2

Pressure transmitter with marking II 2 D	
Max. surface temperature	Ambient/Medium temperature
60 °C	40 °C
80 °C	60 °C
100 °C	80 °C
105 °C	85 °C

Electrical data

Supply and signal circuit ..... (Terminals 1[+], 2[-] and 3[PA])

in type of protection „Intrinsic safety“ EEx ia IIC
only for connection to a certified intrinsically safe circuit

Maximum values:
U_i = 30 V
I_i = 150 mA
P_i = 1 W
effective internal capacitance: 24 nF
effective internal inductance: 0.8 mH

(16) Test documents are listed in the test report No. 04YEX550613.

(17) Special conditions for safe use

1. The pressure port of the pressure transmitter PASCAL CV type CVxx is allowed to be operated in an explosion hazardous area, which requires apparatus of the category 1 only if atmospheric conditions exist (Temperature from -20°C to 60°C, pressure from 0.8 bar to 1.1 bar).
   If the explosion hazardous atmosphere at the pressure port does not require apparatus of the category 1, the maximum permissible medium temperatures may be taken from the following table:

Temperature class	Ambient temperature	Medium temperature
T6	-20 ... +60 °C	-20 ... +60 °C
T5	-20 ... +80 °C	-20 ... +80 °C
T4	-20 ... +85 °C	-20 ... +85 °C

   The permissible operating pressures have to be taken from the manufacturers data (manual) if no explosion hazardous gas mixtures exist.

2. Since the intrinsically safe circuit is connected with the earth potential for safety reasons, potential equalization has to exist in the complete course of the erection of the intrinsically safe circuit.

(18) Essential Health and Safety Requirements

no additional ones

TÜV NORD

Translation

1. SUPPLEMENT

to Certificate Number:	**TÜV 04 ATEX 2387 X**
Equipment:	Pressure transmitter PASCAL CV type CVxx
Manufacturer:	LABOM Mess und Regeltechnik GmbH
Address:	Im Gewerbepark 13 D-27795 Hude
Order number:	8000552888
Date of issue:	2006-05-23

In the future, the pressure transmitter PASCAL CV type CVxx may also be manufactured according to the documents listed in the test report.
The changes refer to an execution of the pressure transmitter for the connection to a profibus as well as the electrical data.
The permissible temperatures, the temperature classes resp. the maximum surface temperatures as well as the markings have to be taken from the following tables:

Table 1

Pressure transmitter with marking II 1/2 G		
Temperature class	Ambient temperature	Medium temperature
T6	-20 ... +55 °C	-20 ... +55 °C
T5	-20 ... +80 °C	-20 ... +60 °C
T4	-20 ... +85 °C	-20 ... +60 °C

Table 2

Pressure transmitter with marking II 2 D	
Max. surface temperature	Ambient/Medium temperature
65 °C	40 °C
85 °C	60 °C
105 °C	80 °C
110 °C	85 °C

Electrical data

Supply and signal circuit ..... (Terminals 1 and 3)

in type of protection Intrinsic Safety EEx ia IIC
only for connection to a certified intrinsically safe circuit according to IEC 60 079-27 (FISCO)
Maximum value:
U_i = 17,5 V

The effective internal capacitance is negligibly small.
effective internal inductance: 10 µH

The equipment incl. of this supplement meets the requirements of these standards:

EN 50014:1997+A1+A2 EN 50020:2002 EN 50281-1-1:1998 EN 50284:1999

(16) The test documents are listed in the test report No. 06 YEX 552888.

(17) Special conditions for safe use

For the pressure transmitter PASCAL CV type CVxx according to this 1. supplement, the "Special condition for safe use" no. 1 is changed as follows:

1. The pressure port of the pressure transmitter PASCAL CV Typ CVxx is allowed to be operated in an explosion hazardous area, which requires apparatus of the category 1 only if atmospheric conditions exist (Temperature from -20°C to 60°C, pressure from 0.8 bar to 1.1 bar).
   If the explosion hazardous atmosphere does not require apparatus of the category 1, the maximum permissible ambient temperatures and medium temperatures have to be taken from the following table:

Temperature class	Ambient temperature	Medium temperature
T6	-20 ... +55 °C	-20 ... +55 °C
T5	-20 ... +80 °C	-20 ... +80 °C
T4	-20 ... +85 °C	-20 ... +85 °C

   The permissible operating pressures have to be taken from the manufacturers data (manual) if no explosion hazardous gas mixtures exist.

The "Special condition for safe use" no. 2 is not applicable for the execution of the pressure transmitter PASCAL CV Typ CVxx for connection to a profibus, because the intrinsically safe supply and signal circuit is floating for safety reasons.

(18) Essential Health and Safety Requirements

no additional ones

TÜV NORD CERT GmbH, Langemarckstraße 20, 45141 Essen, accredited by the central office of the countries for safety engineering (ZLS), Ident. Nr. 0044, legal successor of the TÜV NORD CERT GmbH & Co. KG Ident. Nr. 0032

The head of the certification body

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Translation

2. SUPPLEMENT

to Certificate No.	**TÜV 04 ATEX 2387 X**
Equipment:	Pressure transmitter PASCAL CV type CVxx
Manufacturer:	LABOM Mess und Regeltechnik GmbH
Address:	Im Gewerbepark 13 27795 Hude Germany
Order number:	8000555213
Date of issue:	2009-07-17

In the future, the pressure transmitter PASCAL CV type CVxx may also be manufactured according to the documents listed in the test report.
The changes refer to an execution of the pressure transmitter with a modified basis module and an auxiliary module for the data transmission by HART signals via the 4-20mA supply and signal circuit.

The permissible temperatures, the temperature classes resp. the maximum surface temperatures for pressure transmitters of category 2 have to be taken from the following tables:

Table 1

Pressure transmitters of category 2 G		
Temperature class	Ambient temperature	Medium temperature
T6	-20 ... +60°C	-20 ... +60°C
T5	-20 ... +80°C	-20 ... +80°C
T4	-20 ... +85°C	-20 ... +85°C

Table 2

Pressure transmitters of category 2 D	
Max. surface temperature	Ambient/Medium temperature
60°C	40°C
80°C	60°C
100°C	80°C
105°C	85°C

Electrical data

Supply and signal circuit ..... in type of protection Intrinsic Safety
(Terminals at the plug connector; Ex ia IIC resp. Ex iaD
1[+], 2[-] and 3[PA]) Only for connection to a certified intrinsically safe circuit
Maximum values:
U_i = 30 V
I_i = 150 mA
P_i = 1 W

Effective internal capacitance: 2.4 nF
Effective internal inductance: 10 µH

The equipment according to this supplement meets the requirements of these standards:

EN 60079-0:2006	EN 60079-11:2007	EN 60079-26:2007
EN 61241-11:2006	EN 61241-0:2006	

(16) The test documents are listed in the test report No. 09 203 555213.

(17) Special conditions for safe use

1. The pressure port of the pressure transmitter PASCAL CV type CVxx is allowed to be operated in an explosion hazardous atmosphere, which requires apparatus of the category 1, only if atmospheric conditions exist (Temperature from -20°C to 60°C, pressure from 0.8 bar to 1,1 bar).
   If the explosion hazardous atmosphere on the pressure port requires apparatus of category 1, the maximum permissible medium temperatures are valid according to table 3:

   Table 3

Pressure transmitters of category 1/2 G		
Temperature class	Ambient temperature	Medium temperature
T6	-20 ... +60°C	-20 ... +60°C
T5	-20 ... +80°C	-20 ... +60°C
T4	-20 ... +85°C	-20 ... +60°C

   The permissible operating pressures have to be taken from the regarding data of the manufacturer (manual), if no explosion hazardous gas mixtures exist.

2. Since the intrinsically safe circuits are connected with the earth potential for safety reasons, potential equalization has to exist in the complete course of the erection of the intrinsically safe circuit.

(18) Essential Health and Safety Requirements

no additional ones

TÜV NORD CERT GmbH, Langemarckstraße 20, 45141 Essen, accredited by the central office of the countries for safety engineering (ZLS), Ident. Nr. 0044, legal successor of the TÜV NORD CERT GmbH & Co. KG Ident. Nr. 0032

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Translation

3. SUPPLEMENT

to Certificate No.	**TÜV 04 ATEX 2387 X**
Equipment:	Pressure transmitter PASCAL CV type CVxx
Manufacturer:	LABOM Mess und Regeltechnik GmbH
Address:	Im Gewerbepark 13 27795 Hude Germany
Order number:	8000555670
Date of issue:	2010-06-14

In the future, the pressure transmitter PASCAL CV type CVxx may also be manufactured according to the documents listed in the test report.
The changes refer to the layout and the component assembly of the printed circuit boards for the basis module and the profibus module.

The electrical data as well as all other details and the "Special conditions for safe use" remain unchanged.

The equipment according to this supplement meets the requirements of these standards:

EN 60079-0:2006	EN 60079-11:2007	EN 60079-26:2007
EN 61241-11:2006	EN 61241-0:2006	

(16) The test documents are listed in the test report No. 10 204 555670.

(17) Special conditions for safe use

No changes

(18) Essential Health and Safety Requirements

no additional ones

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Translation

4. SUPPLEMENT

to Certificate No.	**TÜV 04 ATEX 2387 X**
Equipment:	Pressure transmitter PASCAL CV type CVxx
Manufacturer:	LABOM Mess- und Regeltechnik GmbH
Address:	Im Gewerbepark 13 27798 Hude Germany
Order number:	8000408039
Date of issue:	2012-07-31

In the future, the pressure transmitter PASCAL CV type CVxx may also be manufactured according to the documents listed in the test report.
The changes refer to

- modification of a component at the base module
- new types of pressure sensors
- the execution of the sensor pcb`s and a new adapter pcb
- an EMC circuitry in the plug-in connector as well as the "electrical data",
- the "Special conditions for safe use" and
- the marking.

This reads

II 1/2 G Ex ia IIC T4/T5/T6 Ga/Gb resp.
II 2 G Ex ia IIC T4/T5/T6 Gb resp.
II 2 D Ex ia IIIC T60°C/T80°C/T100°C/105°C Db

Electrical data

Supply and signal circuit ..... (For all executions of the pressure transmitters)	in type of protection Intrinsic Safety Ex ia IIC resp. Ex ia IIIC Only for connection to a certified intrinsically safe circuit Maximum values: U_i = 30 V I_i = 150 mA P_i = 1 W Effective internal capacitance: 4.8 nF Effective internal inductance: 20 µH

All other details remain unchanged.

The equipment according to this supplement meets the requirements of these standards:

EN 60079-0:2009 EN 60079-11:2012 EN 60079-26:2007

(16) The test documents are listed in the test report No. 12 204 101783.

(17) Special conditions for safe use

1. The pressure port of the pressure transmitter PASCAL CV type CVxx is allowed to be operated in an explosion hazardous atmosphere, which requires apparatus of the category 1, only if atmospheric conditions exist (Temperature from -20°C to 60°C, pressure from 0.8 bar to 1,1 bar).
   If the explosion hazardous atmosphere on the pressure port requires apparatus of category 1, the maximum permissible medium temperatures are valid according to table 3:

   Table 3

Pressure transmitters of category 1/2 G		
Temperature class	Ambient temperature	Medium temperature
T6	-20 ... +60°C	-20 ... +60°C
T5	-20 ... +80°C	-20 ... +60°C
T4	-20 ... +85°C	-20 ... +60°C

   The permissible operating pressures have to be taken from the regarding data of the manufacturer (manual), if no explosion hazardous gas mixtures exist.

2. Since the intrinsically safe circuits are connected with the earth potential for safety reasons, potential equalization has to exist in the complete course of the erection of the intrinsically safe circuit.

3. The maximum surface temperature regarding dust explosion protection was determined without dust layer. Additional information has to be taken from EN 60079-14.

(18) Essential Health and Safety Requirements

no additional ones

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