Translation

(1) # EC-TYPE EXAMINATION CERTIFICATE

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

(3) EC-Type Examination Certificate Number

TÜV 03 ATEX 2268

(4) Equipment: Portable measuring transformer type PCP/E...

(5) Manufacturer: NIVUS GmbH

(6) Address: D-75031 Eppingen, Im Täle 2

(7) This equipment or protective system and any acceptable variation thereto are 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° 03 YEX 551074.

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

EN 50014:1997 EN 50019:2000 EN 50020:2002

(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 2 G EEx e ib IIB T4

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TÜV CERT-Certification Body
Am TÜV 1
D-30519 Hannover
Tel.: 0511 986-1470
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Hanover, 2003-12-05

Head of the Certification Body

TÜV NORD CERT

Translation

4. SUPPLEMENT

to Certificate No.	**TÜV 03 ATEX 2268**
Equipment:	Portable measuring transformer PCM Pro type PCP-Ex2xxxxx
Manufacturer:	Nivus GmbH
Address:	Im Täle 2 75031 Eppingen Germany
Order number:	8000438150
Date of issue:	2015-12-07

Amendments:

In the future, the portable measuring transformer PCM Pro type PCP-Ex2xxxxx may be operated according to the documents listed in the test report.

The changes refer to (only for apparatus housings without additional graphite admixture):

- an additionally warning hint to be placed on the housing
- additional hints in the manual

Additional, a standard update was performed.

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

EN 60079-0:2012+A11:2013 EN 60079-7:2007 EN 60079-11:2012

(16) The test documents are listed in the test report No. 15 203 146837.

(17) Special conditions for safe use

none

(18) Essential Health and Safety Requirements

no additional ones

TÜV NORD CERT GmbH, Langemarckstraße 20, 45141 Essen, notified 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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(13) **SCHEDULE**

(14) **EC-TYPE EXAMINATION CERTIFICATE N° TÜV 03 ATEX 2268**

(15) Description of equipment

The portable measuring transformer type PCP/E... is intended together with the associated sensors for the measurement of the flow speed and the flow level in partly or fully filled pipes and channels via supersonic technology.

Electrical data

Supply unit (internal battery resp. accumulator pack)	realized in type of protection Increased Safety $U \leq 9.9$ V (3 blocks with each 6 cells) Only the use of the ready-made accumulator pack of the manufacturer (primary and secondary cells) is permissible.
Sensor circuits (7-pole slide-on receptacle pin 1, 2, 5, 6, 7)	in type of protection Intrinsic Safety EEx ib IIB with the following maximum values (per circuit): U_o = 9.9 V I_o = 629 mA characteristic line: rectangular max. permissible outer inductance 0.17 mH max. permissible outer capacitance 4.2 µF
Analogues sensor circuit (7-pole slide-on receptacle pin 3, 4)	in type of protection Intrinsic Safety EEx ib IIB with the following maximum values: U_o = 15.8 V I_o = 1.69 A characteristic line: linear max. permissible outer inductance 5.6 mH max. permissible outer capacitance 0.7 µF
External data storage (front side socket board)	in type of protection Intrinsic Safety EEx ib IIB only for the connection of a Flash Cart $C_i \leq 500$ µF

Optional the following internal circuits are available via the plugs X2 and X9

RS422 interface	in type of protection Intrinsic Safety EEx ib IIB with the following maximum values: U_o = 5 V I_o = 34 mA characteristic line: linear max. permissible outer inductance 160 mH max. permissible outer capacitance 1000 µF

Digital input 1	in type of protection Intrinsic Safety EEx ib IIB with the following maximum values: U_o = 5 V I_o = 5 mA characteristic line: linear max. permissible outer inductance max. permissible outer capacitance	 1000 mH 1000 µF
Digital input 2	in type of protection Intrinsic Safety EEx ib IIB with the following maximum values: U_o = 5 V I_o = 0.5 mA characteristic line: linear max. permissible outer inductance max. permissible outer capacitance	 1000 mH 1000 µF
Diagnose connection	in type of protection Intrinsic Safety EEx ib IIB with the following maximum values: U_o = 5 V I_o = 34 mA characteristic line: linear max. permissible outer inductance max. permissible outer capacitance	 160 mH 1000 µF
3.3 V supply output	in type of protection Intrinsic Safety EEx ib IIB with the following maximum values: U_o = 5 V I_o = 1.51 A characteristic line: linear max. permissible outer inductance max. permissibble outer capacitance	 4.3 mH 1.7 µF

The charging of the accumulator pack and the replacement of the supply unit must only be carried outside of the hazardous explosive area.

(16) Test documents are listed in the test report No.: 03 YEX 551074.

(17) Special conditions for safe use

none

(18) Essential Health and Safety Requirements

no additional ones

Translation

1. SUPPLEMENT

to Certificate No.	**TÜV 03 ATEX 2268**
Equipment:	Portable measuring transformer PCM Pro type PCP/E-x-1xxxxxxxx
Manufacturer:	NIVUS GmbH
Address:	Im Täle 2 75031 Eppingen
Order number:	8000553070
Date of issue:	2006-10-10

In the future, the Portable measuring transformer PCM Pro type PCP/E-x-1xxxxxxxx may also be manufactured according to the documents listed in the test report.

The changes refer to the execution of the PCM Pro main pcb and the electrical data for the circuit „Analogous sensor circuit ".

Electrical data

Analogous sensor circuit ..... in type of protection Intrinsic Safety EEx ib IIB
(7-pole slide-on receptacle, pin 3 and 4)

maximum values:
U_o = 18.9 V
I_o = 32.5 mA
P_o = 614 mW
characteristic line: rectangular

max. permissible external inductance	10 mH	5 mH	0,2 mH	0,1 mH
max. permissible external capacitance	940 nF	1000 nF	1200 nF	1400 nF

All other data apply unchanged for this 1. supplement.

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

EN 50 014:1997 +A1+A2 EN 50019:2000 EN 50 020:2002

(16) The test documents are listed in the test report No. 06 YEX 553070.

(17) Special conditions for safe use

none

(18) Essential Health and Safety Requirements

no additional ones

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The head of the certification body

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Translation

2. SUPPLEMENT

to Certificate No.	**TÜV 03 ATEX 2268**
Equipment:	Portable measuring transformer type PCP-E x 2xxxxxxxx
Manufacturer:	**Nivus GmbH**
Address:	Im Täle 2 75031 Eppingen Germany
Order number:	8000554937
Date of issue:	04.02.2009

Amendments:

New interfaces resp. new external connection facilities had been established. The device had also been upgraded with some new circuits.

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

EN 60079-0:2006 **EN 60079-11:2007** **EN 60079-7:2007**

The marking must include the following:

II 2 G Ex e ib IIB T4

The electrical data are as follows:

The specified external reactance L_o and C_o are valid for simultaneous occurrence. Permissible combinations of the external reactance L_o and C_o have to be taken from the tables of the individual, intrinsically safe circuits.

The following input and output circuits must only be connected to certified, intrinsically safe circuits.

Supply unit ..... (internal battery resp. accumulator pack)	realised in type of protection Increased Safety $U \leq 9.9$ V (3 blocks with each 6 cells) Only the use of the ready-made accumulator pack of the manufacturer (primary and secondary cells) is permissible.

Sensor circuits 1 (WUS)..... in type of protection Intrinsic Safety Ex ib IIB
(7-pole slide-on receptacle with the following maximum values (per circuit):
pin 1, 2, 5, 6, 7) U_o = 9.9 V
I_o = 629 mA
characteristic line: rectangular

maximum external inductance L_o	0.19 mH	0.1 mH	10 µH
maximum external capacitance C_o	5.1 µF	8 µF	10 µF

Sensor circuits 2 (LUS)..... in type of protection Intrinsic Safety Ex ib IIB
(7-pole slide-on receptacle with the following maximum values (per circuit):
pin 1, 2, 5, 6, 7) U_o = 9.9 V
I_o = 629 mA
characteristic line: rectangular

maximum external inductance L_o	0.19 mH	0.1 mH	10 µH
maximum external capacitance C_o	5.1 µF	8 µF	10 µF

Analogues sensor circuit ..... in type of protection Intrinsic Safety Ex ib IIB
(7-pole slide-on receptacle LUS with the following maximum values:
pin 3, 4) U_o = 18.9 V
I_o = 32.5 mA
characteristic line: linear

maximum external inductance L_o	5 mH	0.1 mH	1 µH
maximum external capacitance C_o	1.2 µF	1.4 µF	1.6 µF

RS 422 / RS232 supply output..... in type of protection Intrinsic Safety Ex ib IIB
(7-pole flange socket pin 5, 6 with the following maximum values:
and 8-pole flange socket U_o = 9.9 V
pin 6, 7) I_o = 200 mA
P_o = 1.2 W

maximum external inductance L_o	5.3 mH	0.1 mH	10 µH
maximum external capacitance C_o	2.2 µF	11 µF	22 µF

RS422 interface..... in type of protection Intrinsic Safety Ex ib IIB
(output, 7-pole flange socket with the following maximum values:
pin 3, 4) U_o = 5 V
I_o = 15.3 mA
characteristic line: linear

maximum external inductance L_o	1 mH	0.5 mH	0.1 mH
maximum external capacitance C_o	21 µF	25 µF	42 µF

RS422 interface..... in type of protection Intrinsic Safety Ex ib IIB
(input, 7-pole flange socket with the following maximum values:
pin 1, 2) U_i = 5 V
I_i = 15.3 mA
characteristic line: linear
effective internal inductance: negligibly small
effective internal capacitance: 4,1 nF

RS232 interface..... in type of protection Intrinsic Safety Ex ib IIB
(output, 8-pole flange socket with the following maximum values:
pin 2, 3) U_o = +/-10 V
I_o = +/-16.3 mA
characteristic line: linear

maximum external inductance L_o	1 mH	0.5 mH	0.1 mH
maximum external capacitance C_o	5.8 µF	6.9 µF	11 µF

RS232 interface..... .....in type of protection Intrinsic Safety Ex ib IIB
(input, 8-pole flange socket with the following maximum values:
pin 4, 5) U_i = +/-10 V
I_i = +/-16.3 mA
characteristic line: linear
effective internal inductance: negligibly small
effective internal capacitance: negligibly small

Digital input..... in type of protection Intrinsic Safety Ex ib IIB
Bluetooth-Connection with the following maximum values:
(8-pole flange socket pin 1) U_i = 9.9 V
I_i = 10 mA
characteristic line: linear
effective internal inductance: negligibly small
effective internal capacitance: negligibly small

External data storage ..... in type of protection Intrinsic Safety Ex ib IIB
(front side socket board) only for the connection of a Flash Cart $C_i \leq 500$ µF

Optional the following internal circuits are available for future options.

Digital input 1..... in type of protection Intrinsic Safety Ex ib IIB
with the following maximum values:
U_o = 5 V
I_o = 5 mA
characteristic line: linear

maximum external inductance L_o	10 mH	0.1 mH	1 µH
maximum external capacitance C_o	13 µF	42 µF	1 mF

Digital input 2..... in type of protection Intrinsic Safety Ex ib IIB
with the following maximum values:
U_o = 5 V
I_o = 0.5 mA
characteristic line: linear

maximum external inductance L_o	10 mH	0.1 mH	1 µH
maximum external capacitance C_o	13 µF	42 µF	1 mF

Diagnostic link..... in type of protection Intrinsic Safety Ex ib IIB
with the following maximum values:
U_o = 5 V
I_o = 16.3 mA
characteristic line: linear

maximum external inductance L_o	10 mH	0.1 mH	1 µH
maximum external capacitance C_o	13 µF	42 µF	1 mF

3.3 V supply output ..... in type of protection Intrinsic Safety Ex ib IIB
with the following maximum values:
U_o = 5 V
I_o = 1.51 A
characteristic line: linear

maximum external inductance L_o	0.19 mH	0.1 mH	10 µH
maximum external capacitance C_o	20 µF	32 µF	160 µF

The charging of the accumulator pack and the replacement of the supply unit must only be carried outside of the hazardous explosive area.

(16) The test documents are listed in the test report No. 08 203 554937.

(17) Special conditions for safe use

none

(18) Essential Health and Safety Requirements

no additional ones

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Translation

3. SUPPLEMENT

to Certificate No.	**TÜV 03 ATEX 2268**
Equipment:	Portable measuring transformer PCM Pro type PCP-Ex2xxxxx
Manufacturer:	Nivus GmbH
Address:	Im Täle 2 75031 Eppingen Germany
Order number:	8000398813
Date of issue:	2012-06-01

In the future, the portable measuring transformer PCM Pro type PCP-Ex2xxxxx is manufactured according to the documents listed in the test report.

The changes refer to

- the execution of the PCM Pro main pcb,
- the execution of the housing (metallic plate for plug connectors, new flange sockets)
- the electrical data (Circuit „Analogous sensor circuit" and RS 422 / RS232 supply output) as well as the designations of the connections at the new flange sockets,
- warning hints and
- the marking.

In the future, this reads:

II 2 G Ex e ib IIB T4 Gb

The permissible ambient temperature range is -10 °C ... + 40 °C.

Electrical data

The specified external reactances L_o and C_o are valid for simultaneous occurrence. Permissible combinations of the external reactances L_o and C_o have to be taken from the tables of the individual, intrinsically safe circuits.

Analogous sensor circuit ..... in type of protection Intrinsic Safety Ex ib IIB
(7-pole slide-on receptacle LUS, pin 3 and 4)
Maximum values:
U_o = 18.9 V
I_o = 32.5 mA
P_o = 614 mW
characteristic line: rectangular

max. permissible external inductance	10 mH	5 mH	0.2 mH	0.1 mH
max. permissible external capacitance	940 nF	1000 nF	1200 nF	1400 nF

RS 422 / RS232 supply output ..... in type of protection Intrinsic Safety Ex ib IIB
(7-pole flange socket pin E, F and
and 8-pole flange socket pin F, G)

Maximum values:
U_o = 9.9 V
I_o = 200 mA
P_o = 1.2 W

max. permissible external inductance	50 µH
max. permissible external capacitance	9 µF

RS422 interface ..... in type of protection Intrinsic Safety Ex ib IIB
(output, 7-pole flange socket
pin C, D)

Maximum values:
U_o = 5 V
I_o = 15.3 mA
characteristic line: linear

max. permissible external inductance	1 mH	0.5 mH	0.1 mH
max. permissible external capacitance	21 µF	25 µF	42 µF

RS422 interface ..... in type of protection Intrinsic Safety Ex ib IIB
(input, 7-pole flange socket
pin A, B)

Maximum values:
U_i = 5 V
I_i = 15.3 mA
characteristic line: linear
effective internal inductance: negligibly small
effective internal capacitance: 4,1 nF

RS232 interface ..... in type of protection Intrinsic Safety Ex ib IIB
(output, 8-pole flange socket
pin B, C)

Maximum values:
U_o = +/-10 V
I_o = +/-16.3 mA
characteristic line: linear

maximum external inductance	1 mH	0.5 mH	0.1 mH
maximum external capacitance	5.8 µF	6.9 µF	11 µF

RS232 interface ..... in type of protection Intrinsic Safety Ex ib IIB
(input, 8-pole flange socket
pin D, E)

Maximum values:
U_i = +/-10 V
I_i = +/-16.3 mA
characteristic line: linear
effective internal inductance: negligibly small
effective internal capacitance: negligibly small

Digital input	in type of protection Intrinsic Safety Ex ib IIB
Bluetooth-Connection	Maximum values:
(8-pole flange socket pin A)	U_i = 9.9 V
	I_i = 10 mA
	characteristic line: linear
	effective internal inductance: negligibly small
	effective internal capacitance: negligibly small

All other details remain unchanged.

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

EN 60079-0:2009 **EN 60079-11:2007** **EN 60079-7:2007**

(16) The test documents are listed in the test report No. 12 203 087810.

(17) Special conditions for safe use

none

(18) Essential Health and Safety Requirements

no additional ones

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