IECEx Certificate of Conformity

INTERNATIONAL ELECTROTECHNICAL COMMISSION
IEC Certification System for Explosive Atmospheres

for rules and details of the IECEx Scheme visit www.iecex.com

Certificate No.: **IECEx TUN 20.0009X**

Certificate history:

Status: **Current**

Issue No: 0

Date of Issue: 2020-07-21

Applicant: **NIVUS GmbH**
Im Täle 2
75031 Eppingen
Germany

Equipment: **Particle Concentration Measuring Sensor type PKM-xxxxxx**

Optional accessory:

Type of Protection: **Intrinsic safety**

Marking: Ex ib IIB T4 Gb

Approved for issue on behalf of the IECEx Certification Body: **Thomas Heinen**

Position: **Deputy Head of IECEx Certification Body**

Signature: (for printed version)

Digital unterschrieben von Heinen Thomas
Datum: 2020.07.21 14:26:06 +02'00'

Date:

1. This certificate and schedule may only be reproduced in full.
2. This certificate is not transferable and remains the property of the issuing body.
3. The Status and authenticity of this certificate may be verified by visiting www.iecex.com or use of this QR Code.

Certificate issued by:

TÜV NORD CERT GmbH
Hanover Office
Am TÜV 1, 30519 Hannover
Germany

IECEx Certificate of Conformity

Certificate No.: **IECEx TUN 20.0009X**

Date of issue: 2020-07-21

Issue No: 0

Manufacturer: **NIVUS GmbH**
Im Täle 2
75031 Eppingen
Germany

Additional manufacturing locations:

This certificate is issued as verification that a sample(s), representative of production, was assessed and tested and found to comply with the IEC Standard list below and that the manufacturer's quality system, relating to the Ex products covered by this certificate, was assessed and found to comply with the IECEx Quality system requirements.This certificate is granted subject to the conditions as set out in IECEx Scheme Rules, IECEx 02 and Operational Documents as amended

STANDARDS :
The equipment and any acceptable variations to it specified in the schedule of this certificate and the identified documents, was found to comply with the following standards

IEC 60079-0:2017 Explosive atmospheres - Part 0: Equipment - General requirements
Edition:7.0

IEC 60079-11:2011 Explosive atmospheres - Part 11: Equipment protection by intrinsic safety "i"
Edition:6.0

This Certificate **does not** indicate compliance with safety and performance requirements other than those expressly included in the Standards listed above.

TEST & ASSESSMENT REPORTS:
A sample(s) of the equipment listed has successfully met the examination and test requirements as recorded in:

Test Report:

DE/TUN/ExTR20.0011/00

Quality Assessment Report:

DE/TUN/QAR13.0011/06

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EQUIPMENT:
Equipment and systems covered by this Certificate are as follows:

Description of product:

The Particle Concentration Measuring Sensor type PKM-xxxxxxxx permits the determination of the particle size distribution, particle concentration and optionally the spatially resolved flow velocity in 16 scan layers of liquid media, especially in the wastewater sector, by means of ultrasonic measuring technology.

In addition, the level of the medium can be measured via an integrated hydrostatic pressure measuring cell.

Type code and Electrical data:

See attachment to IECEx TUN 20.0009X issue 0

Thermal data:

Permissible range of the ambient temperature $-20\ °C \leq T_a \leq +50\ °C$

SPECIFIC CONDITIONS OF USE: YES as shown below:
The particle Concentration Measuring Sensor type PKM-xxxxxx has to be installed and used in such a way that electrostatic charging from operation, maintenance or cleaning is excluded.

Annex:

Attachment to IECEx TUN 20.0009X issue 0.pdf

TÜV NORD CERT GmbH
Hannover Office
Am TÜV 1
30519 Hannover
Germany

Product:

Subject and Type:
Particle Concentration Measuring Sensor type PKM-xxxxxxxx

Description:
The Particle Concentration Measuring Sensor type PKM-xxxxxxxx permits the determination of the particle size distribution, particle concentration and optionally the spatially resolved flow velocity in 16 scan layers of liquid media, especially in the wastewater sector, by means of ultrasonic measuring technology.
In addition, the level of the medium can be measured via an integrated hydrostatic pressure measuring cell.

Type code:

PKM-	Type		Particle Concentration Measuring Sensor
	V100		without level and flow velocity measurement
		KT	Wedge sensor made of PPO with PEEK adapter; base plate 1.4571
		RT	PPO tube sensor with PEEK adapter; base plate 1.4571
		ST	Rod sensor made of 1.4571
	V1V1		with flow velocity measurement
		KT	Wedge sensor made of PPO with PEEK adapter; base plate 1.4571
	V1VD		with flow velocity measurement and pressure measuring cell for level measurement
		KT	Wedge sensor made of PPO with PEEK adapter; base plate 1.4571
	V10D		without flow velocity and with pressure measuring cell for level measurement
		KT	Wedge sensor made of PPO with PEEK adapter; base plate 1.4571
		IECEx-	Approval
		0	without
		E	Zone 1
			Cable length
			xx
			Sensor connection
			x Pipe length
			0

Electrical data:

Signal and supply circuit	In type of protection intrinsic safety Ex ib IIB
(Connection wires (cable tail):	Only for connection to certified intrinsically safe circuits.
Red (X1): [+]	Maximum values:
Blue (X2): [GND])	
	U_i = 10.5 V
	I_i = 640 mA
	P_i = 6.72 W
Effective internal capacitance C_i	Capacitance of the permanently connected cable C_c
Effective internal inductance L_i	Inductance of the permanently connected cable L_c

The following applies to the permanently connected cable

Capacitance per unit length	C_c = 90 pF/m
Inductance per unit length unit	L_c = 0.76 µH/m

The connection of the signal and supply circuit to the Ex isolation module type iXT0-xxx and iXT0 xxx according to IECEx TUN 14.0014 is permitted.

Connection wire X3	Shield

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Interface RS485 (Wires (cable tail): White (X5): [RxTx+] Green (X4): [RxTx-] Blue (X2): [GND])	In type of protection intrinsic safety Ex ib IIB with following maximum values:
	U_o = 5.4 V I_o = 125 mA P_o =168.75 mW Characteristic line: linear
Effective internal capacitance C_i	Negligibly small
Effective internal inductance L_i	Negligibly small

The maximum permissible values for the external inductance L_o and the external capacitance C_o have to be taken from the following table:

Ex ib IIB	L_o [mH]	10	5	0.5	0.2	0.001
	C_o [µF]	12	15	28	37	1000

At connection of the RS485 ([RxTx+] und [RxTx-]) interface to belonging measuring transducers with active intrinsically safe circuits, the rules for the interconnection of intrinsically safe circuits have to be observed.

Maximum values:
U_i = 10.74 V
I_i = 263.3 mA
P_i = 634.4 mW

Thermal data:
Permissible ambient temperature range -20 °C $\leq T_a \leq$ +50 °C

Specific Conditions of Use:

The particle Concentration Measuring Sensor type PKM-xxxxxx has to be installed and used in such a way that electrostatic charging from operation, maintenance or cleaning is excluded.