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 18.0023**	Page 1 of 4	Certificate history:
Status:	**Current**	Issue No: 2	Issue 1 (2019-05-10) Issue 0 (2018-11-20)
Date of Issue:	2025-07-16		
Applicant:	**NIVUS GmbH** Im Täle 2 75031 Eppingen **Germany**		
Equipment:	**System "Sensor Family Mini"; see schedule for details**		
Optional accessory:			
Type of Protection:	**Intrinsic Safety "i"**		
Marking:	Ex ib IIB T4 Gb		

Approved for issue on behalf of the IECEx Certification Body: **Andreas Meyer**

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

Signature: (for printed version)

Date: (for printed version)

TÜVNORD Digital unterschrieben von Meyer Andreas Datum: 2025.07.16 09:45:16 +02'00'

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Certificate issued by:

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

TÜV NORD

IECEx Certificate of Conformity

Certificate No.: **IECEx TUN 18.0023**

Date of issue: 2025-07-16 Issue No: 2

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

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/ExTR18.0026/02

Quality Assessment Report:

DE/TUN/QAR13.0011/10

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

In conjunction with the belonging measuring transducers resp. Ex-Separator-Module, the system “Sensor Family Mini” is used for measurement of the flow speed and the flow level in partly or fully filled pipes and channels via supersonic technology.

The system “Sensor Family Mini” consists of the following components:

Electronic Box Mini type EBM

Sensors type

correlation sensor CSM-V100, CSM-V1D0,

CSM-V100Rx, CSP-V2xx,

distance sensor DSM-L0 and level sensor OCL-LM,

clamp-on sensor NIC-CO,

transit time sensor NIS0 V200, TSP0 V200, NIS-V200 and NIS-V280

The permissible ambient temperature range is:

For EBM: -20 °C … 40 °C

For all sensors: -40 °C … 80 °C

For further details see Attachment to IECEx TUN 18.0023X issue No.2

SPECIFIC CONDITIONS OF USE: NO

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DETAILS OF CERTIFICATE CHANGES (for issues 1 and above)
The subject of IECEx TUN 18.0023 issue No.2 is the use of the new POA-V3 sensor electronics (IECEx TUN 15.0014 Issue 2) within the Electronic-Box-Mini EBM, new Ex add-on PCB, new front panel PCB and update to the standards IEC 60079-0:2017 and IEC 60079-11:2011

IECEx TUN 18.0023 issue No.1
Electronic-Box-Mini EBM type V1L1
Internal construction with POA-V2 sensor generation

IECEx TUN 18.0023 issue No.2
Electronic-Box-Mini EBM type V3L1
Internal construction with POA-V3 sensor generation

Note: All outputs are linear due to the electronic changes.

Annex:

Attachment to IECEx TUN 18.0023 issue No.2.pdf

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General product information:

Description:

In conjunction with the belonging measuring transducers resp. Ex-Separator-Module, the system “Sensor Family Mini” is used for measurement of the flow speed and the flow level in partly or fully filled pipes and channels via supersonic technology.

The system “Sensor Family Mini” consists of the following components:

- Electronic-Box-Mini EBM type V1L1 or type V3L1
- Sensors type:
  - Correlation sensor CSM-V100, CSM-V1D0, CSM-V100Rx, CSP-V2xx,
  - Distance sensor DSM-L0 and level sensor OCL-LM,
  - Clamp-on sensor NIC-CO,
  - Transit time sensor NIS0 V200, TSP0 V200, NIS-V200 and NIS-V280

Type code:

Electronic-Box-Mini EBM	**Sensors**	
Type V1L1 or Type V3L1	Correlation sensor	Type CSM-V100, CSM-V1D0, CSM-V100Rx, CSP-V2xx
	Distance sensor	Type DSM-L0 und Füllstandsensor OCL-LM
	Clamp-on sensor	Type NIC-CO
	Transit time sensor	Type NIS0 V200, TSP0 V200, NIS-V200 und NIS-V280

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EBM	Type						Electronic-Box-Mini for connecting for connecting 1 x CSM and 1 x DSM sensor
	V1L1 **V3L1**						Internal construction with POA-V2 sensor generation **Internal construction with POA-V3 sensor generation**
		Design					
		RD					Standard design
		xx					Special design
			IECEx- Approval				
			0				Without
			E				IECEx-Approval Zone 1
				Cable length (max. 150 m)			
				03			3 m
				10			10 m
				99			100 m
				xx			Special length
					K		Cable end pre-assembled for connection to the NivuFlow 750 and NivuFlow 7550 transmitters via the Ex-Separator-Module iXT0

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Electrical data:

System “Sensor Family Mini” with the Electronic-Box-Mini EBM type V**1**L1:

Signal- and supply circuit (Cable tail; Connection wires: Red (X6): + Blue (X8): GND)	In type of protection intrinsic safety Ex ib IIB Only for connection to certified intrinsically safe circuits. Maximum values: 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 = 90 pF/m x L* Effective internal inductance L_i = Inductance of the permanently connected cable = 0.76 µH/m x L*

L*: Length of the connected cable has to not exceed 150 m.

The connection to the measuring transducer type IXT0-xxx (IECEx TUN 14.0014) of the manufacturer NIVUS is permissible.

Connection wire black (X10)	Shield
RS485 interface (Cable tail; Connection wires: White (X14): RxTx+ Green (X13): RxTx- Blue (X8): GND)	In type of protection intrinsic safety Ex ib IIB with maximum values: U_o = 6 V I_o = 81.9 mA (long time; for calculation of P_o) I_o = 154 mA (short time; for calculation of L_o, C_o) P_o = 123 mW Characteristic line: Linear Effective internal capacitance C_i = 10.5 nF Effective internal inductance L_i = 117 µH

The maximum permissible values for the external inductance L_o and the external capacitance C_o can be found in the following table:

Ex ib IIB	L_o [mH]	12.88	9.88	0.38	0.083
	C_o [µF]	7.08	8.38	21.98	29.98

At connection of the RS485 interface to belonging measuring transducers with active intrinsically safe circuits, the rules for the interconnection of intrinsically safe circuits have to be observed.

Or

RS485 interface (Cable tail; Connection wires: White (X14): RxTx+ Green (X13): RxTx- Blue (X8): GND)	Maximum values: U_i = 12.06 V I_i = 176 mA P_i = 531 mW Effective internal capacitance C_i = Capacitance of the permanently connected cable C_c C_c = 70 pF/m x L* Effective internal inductance L_i = Inductance of the permanently connected cable L_c L_c = 0.78 µH/m x L*

L*: Length of the connected cable has to not exceed 150 m.

The internal pressure circuit (X1..X4) and temperature circuit (X12;X5;X7) are designed in type of protection intrinsic safety Ex ib IIB and are not accessible to the user.

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The interconnection of the Electronic-Box-Mini EBM with the sensors

- Correlation sensor Mini type CSM-V100 or CSM-V1D0 or CSM-V100Rx or CSP-V2xx and
- Distance sensor Mini type DSM (or filling level sensor type OCL-LM)

via a cable of the manufacturer with a length of 20 m is permissible.

Piezo connections (Connector Pins A/B or C/D)	In type of protection Intrinsic Safety Ex ib IIB Only for connection to the intrinsically safe circuits of the devices “Electronic-Box-Mini” EBM or the “NivuFlow Mobile” NFM of the manufacturer with safe energy limitation: C_i = 11 nF L_i = 12 µH
1-Wire temperature sensor 1-Wire EEPROM (Connector Pins E, F and J)	In type of protection Intrinsic Safety Ex ib IIB Only for connection to certified intrinsically safe circuits. Maximum values: U_i = 6 V I_i = 188 mA P_i = 282 mW Effective internal capacitance C_i = 120 nF Effective internal inductance is negligibly small.
Pressure cell (Connector Pins E, G, H and J)	In type of protection Intrinsic Safety Ex ib IIB Only for connection to certified intrinsically safe circuits. Maximum values: U_i = 6 V I_i = 264 mA P_i = 396 mW Effective internal capacitance C_i = 6.484 µF Effective internal inductance is negligibly small.

All intrinsically safe circuits are galvanically interconnected with each other via GND potential and safely galvanically separated from earth potential.

System “Sensor Family Mini” with the Electronic-Box-Mini EBM type V**3**L1:

Signal- and supply circuit (Cable tail; Connection wires: Red (X1): + Blue (X2): GND)	In type of protection intrinsic safety Ex ib IIB Only for connection to certified intrinsically safe circuits. Maximum values: U_i = 10.5 V I_i = 640 mA P_i = 6.72 W Effective internal capacitance C_i = 2.2 µF + Capacitance of the permanently connected cable = 2.2 µF + 90 pF/m x L* Effective internal inductance L_i = 4.7 µH + Inductance of the permanently connected cable = 4.7 µH + 0.76 µH/m x L*

L*: Length of the connected cable has to not exceed 150 m.

The connection to the measuring transducer type IXT0-xxx (IECEx TUN 14.0014) of the manufacturer NIVUS is permissible.

Connection wire black (X3)	Shield

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RS485 interface (Cable tail; Connection wires: White (X5): RxTx+ Green (X4): RxTx- Blue (X2): GND)	In type of protection intrinsic safety Ex ib IIB with maximum values: U_o = 5.4 V I_o = 76 mA (long time; for calculation of P_o) I_o = 124.93 mA (short time; for calculation of L_o, C_o) P_o = 102.6 mW Characteristic line: Linear Effective internal capacitance C_i = 10.5 nF Effective internal inductance L_i = 117 µH

The maximum permissible values for the external inductance L_o and the external capacitance C_o can be found in the following table:

Ex ib IIB	L_o [mH]	19.88	9.88	0.38	0.08
	C_o [µF]	7.98	11.98	27.98	36.98

At connection of the RS485 interface to belonging measuring transducers with active intrinsically safe circuits, the rules for the interconnection of intrinsically safe circuits have to be observed.

Or

RS485 interface (Cable tail; Connection wires: White (X5): RxTx+ Green (X4): RxTx- Blue (X2): GND)	Maximum values: U_i = 10.7 V I_i = 236.3 mA P_i = 634.4 mW Effective internal capacitance C_i = Capacitance of the permanently connected cable C_c C_c = 70 pF/m x L* Effective internal inductance L_i = 1.5 mH + Inductance of the permanently connected cable L_c L_c = 1.5 mH + 0.78 µH/m x L*

L*: Length of the connected cable has to not exceed 150 m.

The internal pressure circuit (X6..X9) and temperature circuit (X10;X11;X12) are designed in type of protection intrinsic safety Ex ib IIB and are not accessible to the user.

The interconnection of the Electronic-Box-Mini EBM with the sensors

- Correlation sensor Mini type CSM-V100 or CSM-V1D0 or CSM-V100Rx or CSP-V2xx and
- Distance sensor Mini type DSM (or filling level sensor type OCL-LM)

via a cable of the manufacturer with a length of 20 m is permissible.

Piezo connections (Connector Pins A/B or C/D)	In type of protection Intrinsic Safety Ex ib IIB Only for connection to the intrinsically safe circuits of the devices “Electronic-Box-Mini” EBM or the “NivuFlow Mobile” NFM of the manufacturer with safe energy limitation: C_i = 11 nF L_i = 12 µH
1-Wire temperature sensor 1-Wire EEPROM (Connector Pins E, F and J)	In type of protection Intrinsic Safety Ex ib IIB Only for connection to certified intrinsically safe circuits. Maximum values: U_i = 6 V I_i = 188 mA P_i = 282 mW Effective internal capacitance C_i = 120 nF Effective internal inductance is negligibly small.

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Pressure cell (Connector Pins E, G, H and J)	In type of protection Intrinsic Safety Ex ib IIB Only for connection to certified intrinsically safe circuits. Maximum values: U_i = 6 V I_i = 264 mA P_i = 396 mW Effective internal capacitance C_i = 6.484 µF Effective internal inductance is negligibly small.

All intrinsically safe circuits are galvanically interconnected with each other via GND potential and safely galvanically separated from earth potential.

Thermal data:
Permissible ambient temperature range during operation:

- Elektronik-Box-Mini type EBM: -20 °C … +40 °C
- For all Sensors: -40 °C … +80 °C

Details of change:
The subject of IECEx TUN 18.0023 issue No.2 is the use of the new POA-V3 sensor electronics (IECEx TUN 15.0014 Issue 2) within the Electronic-Box-Mini EBM, new Ex add-on PCB, new front panel PCB and update to the standards IEC 60079-0:2017 and IEC 60079-11:2011

IECEx TUN 18.0023 issue No.1	IECEx TUN 18.0023 issue No.2
Electronic-Box-Mini EBM type V**1**L1 Internal construction with POA-V2 sensor generation	Electronic-Box-Mini EBM type V**3**L1 **Internal construction with POA-V3 sensor generation**

Note: All outputs are linear due to the electronic changes.

Specific Conditions of Use:
None.