



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 18.0008X** Page 1 of 4 Certificate history:
Issue 0 (2018-07-27)

Status: **Current** Issue No: 1

Date of Issue: 2019-11-13

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

Equipment: **Portable Measuring Transformer NivuFlow Mobile type NFM-0xxx x E, NivuLevel Mobile type NFM-0050 x E**

Optional accessory:

Type of Protection: **Increased safety "e", intrinsic safety "i", encapsulation "m"**

Marking: Ex eb ib [ib] mb IIB T4 Gb

Approved for issue on behalf of the IECEx
Certification Body:

Christian Roder

Position:

Head of the IECEx Certification Body

Signature:
(for printed version)

Date:

2019-11-13

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.
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Certificate issued by:

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



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Date of issue: 2019-11-13

Issue No: 1

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 60079-0:2011 Explosive atmospheres - Part 0: General requirements
Edition:6.0

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

IEC 60079-18:2014 Explosive atmospheres – Part 18: Equipment protection by encapsulation "m"
Edition:4.0

IEC 60079-7:2015 Explosive atmospheres – Part 7: Equipment protection by increased safety "e"
Edition:5.0

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/EXTR18.0013/00](#)

Quality Assessment Report:

[DE/TUN/QAR13.0011/06](#)



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Date of issue: 2019-11-13

Issue No: 1

EQUIPMENT:

Equipment and systems covered by this Certificate are as follows:

Together with the belonging sensors, the "Portable Measuring Transformer"

NivuFlow Mobile type NFM-0xxx x E and

NivuLevel Mobile type NFM-0050 x E

are used for the measurement of the flow speed and the flow level in partly or fully filled pipes and channels via supersonic technology.

The Portable Measuring Transformer type NivuFlow Mobile NFM is operated stationary.

The permissible ambient temperature range is -15 °C ... +50 °C.

For further information, see attachment.

SPECIFIC CONDITIONS OF USE: YES as shown below:

1. Electrostatic charge has to be avoided for all housing parts and the interlock; the manual of the manufacturer has to be observed.
2. Charging of the supply batteries is only permitted outside of the explosion hazardous area with the charger of the manufacturer or with a separately certified charger (intrinsically safe charge circuit); the manual of the manufacturer has to be observed.
3. Change of the supply batteries / backup battery is only permitted outside of the explosion hazardous area.
4. Only permissible batteries according to the manufacturer's operating instructions are allowed to be used.
5. The memory stick is only permitted to be used outside of the explosion hazardous area at the USB port.
6. The change of the SIM card is only permitted outside of the explosion hazardous area. See "Electrical data" for operation in the explosion hazardous area.
7. Operation is only allowed in vertical position (plug-connectors downwards).
8. The housing has to be additionally secured by an interlock provided by the manufacturer.
9. The battery in the right-hand housing part (connections MP1/MP2) is not allowed to be connected, if the external power supply is used.
10. The connections at X8 are only permissible for use of the manufacturer for firmware-updates in the safe area.



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Date of issue: 2019-11-13

Issue No: 1

DETAILS OF CERTIFICATE CHANGES (for issues 1 and above)

- Mechanical changes
- Layout changes
- Electrical data partly changed
- Special Conditions partly changed
- New type with less components "NivuLevel Mobile type NFM-0050 x E"

Annex:

[Attachment_issue 1_NivuFlow Mobile.pdf](#)

Product:

Together with the belonging sensors, the Portable Measuring Transformer NivuFlow Mobile type NFM-0xxx x E and NivuLevel Mobile type NFM-0050 x E are used for the measurement of the flow speed and the flow level in partly or fully filled pipes and channels via supersonic technology. The Portable Measuring Transformer NivuFlow Mobile/NivuLevel Mobile type NFM... is operated stationary.

The permissible ambient temperature range is -15 °C ... +50 °C.

Electrical data

Supply voltage $U_n = 12 \text{ V d. c.}$
(Internal plug connections) Powered with max. 2 x 12 V/15Ah VRLA-Pb-batteries;

External supply circuit in type of protection Intrinsic Safety Ex ib IIB
(X1R [Uin], Only for connection to an intrinsically safe circuit
X1B [GND]) Maximum values:
 $U_i = 14.5 \text{ V}$
 $I_i = 1.25 \text{ A}$
 $P_i = 18.1 \text{ W}$
The effective internal capacitances and inductances are negligibly small.

1 wire circuit in type of protection Intrinsic Safety Ex ib IIB
(CSM connector X10E [GND], Maximum values:
X10F [1 wire];
DSM connector X8E [GND], X8F [1 wire]) $U_o = 3.7 \text{ V}$
 $I_o = 57.3 \text{ mA}$
 $P_o = 53 \text{ mW}$
Characteristic line: linear

	Ex ib		IIB	
	max. permissible external inductance	65 mH	10 mH	1 mH
max. permissible external capacitance	9.4 µF	21 µF	37 µF	

5 V circuit in type of protection Intrinsic Safety Ex ib IIB
(CSM connector X10E [GND], Maximum values:
X10J [+5 V-Ex];
DSM connector $U_o = 5.93 \text{ V}$
X8E [GND], X8J [+5 V-Ex]) $I_o = 91.7 \text{ mA}$
 $P_o = 135.9 \text{ mW}$
Characteristic line: linear

	Ex ib		IIB	
	max. permissible external inductance	1 mH	0.2 mH	0.1 mH
max. permissible external capacitance	14 µF	23 µF	30 µF	

RS485 interface pressure, output in type of protection Intrinsic Safety Ex ib IIB
(CSM connector X10G [- RxTx],
X10H [+ RxTx]) Maximum values:

$U_o = 3.7 \text{ V}$
 $I_o = 95.1 \text{ mA}$
 $P_o = 88 \text{ mW}$
Characteristic line: linear

Ex ib	IIB		
max. permissible external inductance	25 mH	10 mH	1 mH
max. permissible external capacitance	11 μF	18 μF	36 μF

RS485 interface pressure, input in type of protection Intrinsic Safety Ex ib IIB
(CSM connector X10G [- RxTx],
X10H [+ RxTx]) Only for connection to an intrinsically safe circuit
Maximum values:

$U_i = 7.21 \text{ V}$
 $I_i = 176 \text{ mA}$
 $P_i = 317.2 \text{ mW}$
The effective internal capacitances and inductances are negligibly small.

Radar sensor supply in type of protection Intrinsic Safety Ex ib IIB
(Connector X1A, X1B) Maximum values:

$U_o = 9.87 \text{ V}$
 $I_o = 629 \text{ mA}$
 $P_o = 6.21 \text{ W}$
Characteristic line: rectangular

Ex ib	IIB		
max. permissible external inductance	0.2 mH	0.1 mH	0.05 mH
max. permissible external capacitance	5 μF	8 μF	11.9 μF

RS485 interface, output in type of protection Intrinsic Safety Ex ib IIB
(Connector X1C, X1D) Maximum values:

$U_o = 3.7 \text{ V}$
 $I_o = 95.1 \text{ mA}$
 $P_o = 88 \text{ mW}$
Characteristic line: linear

Ex ib	IIB		
max. permissible external inductance	25 mH	10 mH	1 mH
max. permissible external capacitance	11 μF	18 μF	36 μF

RS485 interface, input in type of protection Intrinsic Safety Ex ib IIB
(Connector X1C, X1D) Only for connection to an intrinsically safe circuit
Maximum values:
 $U_i = 10.21 \text{ V}$
 $I_i = 248.8 \text{ mA}$
 $P_i = 633.8 \text{ mW}$
The effective internal capacitances and inductances are negligibly small.

Analogue input no. 1 /2 in type of protection Intrinsic Safety Ex ib IIB
(Connector X1G, X1F; X1H, X1J) Maximum values:
NivuLevel Mobile type NFM-0050 x E: $U_o = 22.2 \text{ V}$
Connector X7C, X7E; X7B, X7D) $I_o = 33 \text{ mA}$
 $R = 48 \text{ } \Omega$
 $P_o = 624 \text{ mW}$
Characteristic line: trapezoidal

Ex ib	IIB		
max. permissible external inductance	20 mH	1 mH	0.1 mH
max. permissible external capacitance	0.52 μF	0.56 μF	1 μF

Analogue input no. 3 in type of protection Intrinsic Safety Ex ib IIB
(Connector X1K, X1M) Maximum values:
 $U_o = 3.7 \text{ V}$
 $I_o = <1 \text{ mA}$
 $P_o = <1 \text{ mW}$
Characteristic line: linear

Ex ib	IIB		
max. permissible external inductance	100 mH	10 mH	1 mH
max. permissible external capacitance	19 μF	24 μF	38 μF

Analogue input no. 3 in type of protection Intrinsic Safety Ex ib IIB
(Connector X1K, X1M) Only for connection to an intrinsically safe circuit
Maximum values:
 $U_i = 5.53 \text{ V}$
 $I_i = 33.5 \text{ mA}$
 $P_i = 185.4 \text{ mW}$
The effective internal capacitances and inductances are negligibly small.

Analogue output in type of protection Intrinsic Safety Ex ib IIB
(Connector X1L, X1M) Maximum values:
 $U_o = 15.78 \text{ V}$
 $I_o = 177.4 \text{ mA}$
 $P_o = 700 \text{ mW}$
Characteristic line: linear

Ex ib	IIB		
max. permissible external inductance	5.5 mH	1 mH	0.1 mH
max. permissible external capacitance	1 μF	2.4 μF	2.6 μF

Digital input in type of protection Intrinsic Safety Ex ib IIB
(Connector X1N, X1P) Maximum values:
 $U_o = 3.7 \text{ V}$
 $I_o = < 1 \text{ mA}$
 $P_o = < 1 \text{ mW}$
Characteristic line: linear

Ex ib	IIB		
max. permissible external inductance	100 mH	1 mH	0.1 mH
max. permissible external capacitance	19 μF	38 μF	81 μF

Digital input in type of protection Intrinsic Safety Ex ib IIB
(Connector X1N, X1P) Only for connection to an intrinsically safe circuit
Maximum values:
 $U_i = 19.69 \text{ V}$
 $I_i = 4.23 \text{ mA}$
 $P_i = 83.3 \text{ mW}$
The effective internal capacitances and inductances are negligibly small.

Piezo circuits in type of protection Intrinsic Safety Ex ib IIB
(CSM connector X10 A/B and C/D,
DSM connector X8 A/B and C/D) Only for connection
to the belonging sensors of the manufacturer
Max. output energy: 146 μJ

Relay output in type of protection Intrinsic Safety Ex ib IIB
(Connector X1S, X1T, X1U) Only for connection to an intrinsically safe circuit
Maximum values:
 $U_i = 26 \text{ V}$
 $I_i = 100 \text{ mA}$
 $P_i = 2.6 \text{ W}$
The effective internal capacitances and inductances are negligibly small.

SIM-card circuit in type of protection Intrinsic Safety Ex ib IIB
(SIM-CARD connector) Maximum values:
 $U_o = 4.5 \text{ V}$
 $I_o = 283 \text{ mA}$
 $P_o = 319 \text{ mW}$
Characteristic line: linear

Ex ib	IIB		
max. permissible external inductance	1 mH	0.1 mH	0.02 mH
max. permissible external capacitance	21 μF	51 μF	120 μF

The rules for interconnection of intrinsically safe circuits have to be observed.

Special Conditions for Safe Use:

1. Electrostatic charge has to be avoided for all housing parts and the interlock; the manual of the manufacturer has to be observed.
2. Charging of the supply batteries is only permitted outside of the explosion hazardous area with the charger of the manufacturer or with a separately certified charger (intrinsically safe charge circuit); the manual of the manufacturer has to be observed.
3. Change of the supply batteries / backup battery is only permitted outside of the explosion hazardous area.
4. Only permissible batteries according to the manufacturer`s operating instructions are allowed to be used.
5. The memory stick is only permitted to be used outside of the explosion hazardous area at the USB port.
6. The change of the SIM card is only permitted outside of the explosion hazardous area. See "Electrical data" for operation in the explosion hazardous area.
7. Operation is only allowed in vertical position (plug-connectors downwards).
8. The housing has to be additionally secured by an interlock provided by the manufacturer.
9. The battery in the right-hand housing part (connections MP1/MP2) is not allowed to be connected, if the external power supply is used.
10. The connections at X8 are only permissible for use of the manufacturer for firmware-updates in the safe area.