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 BKI 16.0002**	Page 1 of 4	Certificate history:
Status:	**Current**	Issue No: 1	Issue 0 (2016-10-27)
Date of Issue:	2022-03-28		
Applicant:	**NIVELCO Process Control Co.** H-1043 Budapest, Dugonics utca 11. **Hungary**		
Equipment:	**Vibration fork level switch family**		
Optional accessory:	NIVOSWITCH RN-400		
Type of Protection:	**General requirements, Equipment protection by flameproof enclosures "d", Equipment with Separation Elements or combined Levels of Protection**		
Marking:	Ex db IIB T6…T4 Ga/Gb		

Approved for issue on behalf of the IECEx Certification Body: **Nagy Botond**

Position: **Head of the Certification Body**

Signature:
(for printed version)

Date:
(for printed version)

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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:

ExVA Ltd
MIKOVINY S.u. 2-4
BUDAPEST H 1037
Hungary

IECEx Certificate of Conformity

Certificate No.: **IECEx BKI 16.0002**

Date of issue: 2022-03-28 Issue No: 1

Manufacturer: **NIVELCO Process Control Co.**
H-1043 Budapest, Dugonics utca 11.
Hungary

Manufacturing locations: **NIVELCO Process Control Co.**
H-1043 Budapest, Dugonics utca 11.
Hungary

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 Edition:7.0 — Explosive atmospheres - Part 0: Equipment - General requirements

IEC 60079-1:2014-06 Edition:7.0 — Explosive atmospheres - Part 1: Equipment protection by flameproof enclosures "d"

IEC 60079-26:2021-02 Edition:4.0 — Explosive atmospheres - Part 26: Equipment with Separation Elements or combined Levels of Protection

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 Reports:

HU/BKI/ExTR16.0002/00 HU/BKI/ExTR16.0002/01

Quality Assessment Report:

HU/BKI/QAR09.0001/12

IECEx Certificate of Conformity

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

The vibration forks type NIVOSWITCH R**-4**-*Ex are applicable for level switching tasks of liquids. The tuning fork shaped sensor device is a vibrating mechanical system, which is vibrated by a piezo-electric crystal on resonant frequency. The measured material arriving in the fork changes the frequency of tuning fork resp. the amplitude of vibration. In the presence of an appropriate amount of material, the electronics switches, driven an output relay.

See details in Addendum to IECEx BKI 16.0002.

SPECIFIC CONDITIONS OF USE: NO

IECEx Certificate of Conformity

DETAILS OF CERTIFICATE CHANGES (for issues 1 and above)
The following change is introduced in in this Certificate:

- Carrying out a risk assessment in accordance with current standards to ensure compliance with the essential health and safety requirements.
- Clarification of technical data.
- Modification of part number characters that do not affect Ex protection.
- Updating of device documentation.

In all other aspects the product is unchanged according to Certificate nr. IECEx BKI 16.0002.

See details in Addendum to IECEx BKI 16.0002/1.

Annexes:

Addendum to IECEx BKI 16.0002-1.pdf
Addendum to IECEx BKI 16.0002.pdf

Type:

NIVOSWITCH R □ □ – 4 □ □ – □ Ex

DESIGN	CODE
Ex d house + fork:1.4571	N
Ex d house + fork with extra polish	M

TECHN. CONNECTION	CODE
0...9, A...Z	

HOUSE	CODE
Alu casting	4

INSERTION LENGTH		CODE
Basic design	69 mm	00
	125 mm	01
Extended design 0,2...3m		02...30

OUTPUT / EX	CODE
Relay 1 pc / Ex d	N
Relay 2 pcs / Ex d	P

Technical data:

TYPE		R**-4**-N Ex, R**-4**-P Ex
Material of parts contacting to medium		1.4571 (316Ti)
Technologial connection		according to ordering code
Material of house of electronic		sintered aluminium casting EN AC 43100
Temperature ranges	Medium	see point 15.3 of basic certificate)
	Outer ambient	see point 15.3 of basic certificate)
Medium pressure		max. 40 bar (4 MPa)
Insertion length		69…3000 mm, according to ordering code
Medium density		≥ 0,7 kg/dm^3
Medium viscosity		≤ 10000 mm^2/s (cSt)
Swiching delay	At immersion	≤ 0,5 sec
	At becoming free	≤1 sec see reconnection diagram
Output		1 or 2 pcs cooperating changeover contact (SPDT) relay 250 V AC, 8 A, AC1 / 250 V AC, 6 A, AC1
Electrical connection		Cable gland: Ex d IIC 2x M20x1,5 2 x ½" NPT inner thread for cable protection tube pluggable terminal block: max. 1,5 mm^2 dia. cable
Power supply		20 ... 250 V AC; 20…36V DC
Power consumption		DC: < 3 W
SELV protecion		I. SELV protecion class
IP protection		IP 67

1. Description

The vibration forks type NIVOSWITCH R**-4**-*Ex are applicable for level switching tasks of liquids. The tuning fork shaped sensor device is a vibrating mechanical system, which is vibrated by a piezo-electric crystal on resonant frequency. The measured material arriving in the fork changes the frequency of tuning fork resp. the amplitude of vibration. In the presence of an appropriate amount of material, the electronics switches, driven an output relay.

The apparatus consists of three main parts:
- housing of electronics, made of cast aluminium alloy
- encapsulated electronics
- stainless steel welded sensor enclosure with vibrating fork unit

The housing and the sensor enclosure are divided from each other with an explosion protective rated line bushing. Hence, they build two fully separated Ex d compartments.

Between the two compartments are a separation wall with wall thickness above 3 mm and an Ex d rated line bushing sealed with “O”-ring. The wall thickness of the stainless steel vibration probe is everywhere above 1 mm and since it does not contain ignition parts, this construction is fully in compliance with requirements of EPL Ga.

2. Type assortment

NIVOSWITCH R _ _ - 4 _ _ - _ Ex

- output : relay (N, P)
- insertion length (00...30)
- metal housing (4)
- process connection (M, P, H, N, G, B, K)
- design (N, M)

3. Electrical data

Supply voltage	20...250 VAC (50/60 Hz) or 20…36 VDC
Power consumption	AC: 1,2 VA ... 17 VA / DC: < 3 W
Type of relay output	one or two SPDT
Output rating	250 V AC, 8 A, AC 1 resp. 250 V AC, 8 A, AC 1
Electric shock protection:	I. class / earthing / (IEC 60364-4-41)

4. Temperature range

- ambient temperature: -40°C … +70°C
- medium temperature: according to table

temperature data	R**-4**N Ex , R**-4**P Ex			
medium temperature min. -40°C … max. :	+70°C	+80°C	+95°C	+130°C
ambient temperature min. -40°C … max. :	+65°C	+50°C	+65°C	+70°C
max. surface temperature of process connection	+70°C	+80°C	+95°C	+125°C
max. surface temperature	+75°C	+80°C	+95°C	+130°C
temperature class	T6		T5	T4

5. Ingress protection

The enclosure provides a degree of protection IP 67.

6. Special conditions for safe use: none

7. Manufacturer’s Documents

Document Title:	Document Reference No.:	Rev.:	Date:
Technical description	RNM-400-NI-060-0M	0	2016.09.06.
Ex vibrating fork	RNM-410-NI-000-0X	0	2013.12.18.
Ex welded enclosure	RNM-410-NM-310-00	0	2016.10.12.
Ex. Data plate	RNM-400-NI-050-0L	0	2014.02.07.
Ex Threaded plug 1/2” NPT	TNP-561-8M-000-03	0	2004.12.15.
Ex. Printed cover	RNM-410-RF-400-00	0	2015.12.15.
Ex NIVOSWITCH RNM-400 R-card RNM4PR01.SCH electrical schematic diagram	RNM-400-PM-210-00 (RNM4PR01.SCH)	0	2016.09.14.
„R” card, parts list	RNM-400-PM-210-00		2016.09.14.

Document Title:	Document Reference No.:	Rev.:	Date:
Ex NIVOSWITCH RNM-400 P-card RF400P01.SCH electrical schematic diagram	RFM-400-0M-212-00 (RF400P01.SCH)	0	2016.09.12.
„P" card, parts list	RFM-400-0M-212-00		2016.09.12.
Routine Test for NIVOSWITCH R_ _-4_ _-_Ex	RNM-400-PM-060-0U	1	2016.09.12.
User's Manual	rfm4000a0600h_04	04	2016.
Certificate of Conformity	IECEx EPS 11.0004X	Issue 1	2013.01.22.
Certificate of Conformity	IECEx EPS 13.0045U	Issue 0	2014.02.07.
Certificate of Conformity	IECEx PTB 06.0081 U	Issue 1	2012.01.27.
data sheet of installed materials resp. components	different		

IECEx Certificate of Conformity

INTERNATIONAL ELECTROTECHNICAL COMMISSION
IEC Certification Scheme for Explosive Atmospheres

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

Certificate No.:	IECEx BKI 16.0002	Issue No: 0	Certificate history: Issue No. 0 (2016-10-27)
Status:	**Current**	Page 1 of 3	
Date of Issue:	**2016-10-27**		
Applicant:	**NIVELCO Process Control Co.** H-1043 Budapest, Dugonics utca 11. **Hungary**		
Equipment:	**Vibration fork level switch family**		
Optional accessory:	*NIVOSWITCH R**-4**-*Ex*		
Type of Protection:	**General requirements,**		
Marking:	**Ex d IIB T6...T4 Ga/Gb** **-40 °C ≤ T_{amb} ≤ +70 °C**		

Approved for issue on behalf of the IECEx Certification Body: János Müllner

Position: managing director

Signature: (for printed version)

Date: 2016-10-27

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 the Official IECEx Website.

Certificate issued by:

Testing Station for Explosion Proof Equipment
H 1037 BUDAPEST
MIKOVINY S.u. 2-4
Hungary

Robbanásbiztos Berendezések BKI Vizsgáló Állomása Ex

IECEx Certificate of Conformity

Certificate No:	IECEx BKI 16.0002	Issue No: 0
Date of Issue:	**2016-10-27**	Page 2 of 3
Manufacturer:	**NIVELCO Process Control Co.** H-1043 Budapest, Dugonics utca 11. **Hungary**	

Additional Manufacturing location(s):

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STANDARDS:

The electrical apparatus 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 Edition:6.0	Explosive atmospheres - Part 0: General requirements
IEC 60079-1 : 2014-06 Edition:7.0	Explosive atmospheres - Part 1: Equipment protection by flameproof enclosures "d"
IEC 60079-26 : 2014-10 Edition:3.0	Explosive atmospheres – Part 26: Equipment with Equipment Protection Level (EPL) Ga

*This Certificate **does not** indicate compliance with electrical 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:

HU/BKI/ExTR16.0002/00

Quality Assessment Report:

HU/BKI/QAR09.0001/06

IECEx Certificate of Conformity

Certificate No:	IECEx BKI 16.0002	Issue No: 0
Date of Issue:	**2016-10-27**	Page 3 of 3

Schedule

EQUIPMENT:

Equipment and systems covered by this certificate are as follows:

The vibration forks type NIVOSWITCH R**-4**-*Ex are applicable for level switching tasks of liquids. The tuning fork shaped sensor device is a vibrating mechanical system, which is vibrated by a piezo-electric crystal on resonant frequency. The measured material arriving in the fork changes the frequency of tuning fork resp. the amplitude of vibration. In the presence of an appropriate amount of material, the electronics switches, driven an output relay.

See details in Addendum to IECEx BKI 16.0002.

CONDITIONS OF CERTIFICATION: NO

Annex:

Addendum to IECEx BKI 16.0002.pdf

ADDENDUM TO IECEx CERTIFICATE OF CONFORMITY

IECEx BKI 16.0002

1. Description

The vibration forks type NIVOSWITCH R**-4**-*Ex are applicable for level switching tasks of liquids. The tuning fork shaped sensor device is a vibrating mechanical system, which is vibrated by a piezo-electric crystal on resonant frequency. The measured material arriving in the fork changes the frequency of tuning fork resp. the amplitude of vibration. In the presence of an appropriate amount of material, the electronics switches, driven an output relay.

The apparatus consists of three main parts:
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- encapsulated electronics
- stainless steel welded sensor enclosure with vibrating fork unit

The housing and the sensor enclosure are divided from each other with an explosion protective rated line bushing. Hence, they build two fully separated Ex d compartments.

Between the two compartments are a separation wall with wall thickness above 3 mm and an Ex d rated line bushing sealed with "O"-ring. The wall thickness of the stainless steel vibration probe is everywhere above 1 mm and since it does not contain ignition parts, this construction is fully in compliance with requirements of EPL Ga.

2. Type assortment

NIVOSWITCH R _ _ - 4 _ _ - _ Ex

- output : relay (N, P)
- insertion length (00...30)
- metal housing (4)
- process connection (M, P, H, N, G, B, K)
- design (N, M)

3. Electrical data

Supply voltage	20...250 VAC (50/60 Hz) or 20...36 VDC
Power consumption	AC: 1,2 VA ... 17 VA / DC: < 3 W
Type of relay output	one or two SPDT
Output rating	250 V AC, 8 A, AC 1 resp. 250 V AC, 8 A, AC 1
Electric shock protection:	I. class /earthing/ (IEC 60364-4-41)

4. Temperature range

- ambient temperature: -40°C ... +70°C
- medium temperature: according to table

temperature data	R**-4**N Ex , R**-4**P Ex			
medium temperature min. -40°C ... max. :	+70°C	+80°C	+95°C	+130°C
ambient temperature min. -40°C ... max. :	+65°C	+50°C	+65°C	+70°C
max. surface temperature of process connection	+70°C	+80°C	+95°C	+125°C
max. surface temperature	+75°C	+80°C	+95°C	+130°C
temperature class	T6		T5	T4

5. Ingress protection

The enclosure provides a degree of protection IP 67.

6. Special conditions for safe use: none

7. Manufacturer's Documents

Document Title:	Document Reference No.:	Rev.:	Date:
Technical description	RNM-400-NI-060-0M	0	2016.09.06.
Ex vibrating fork	RNM-410-NI-000-0X	0	2013.12.18.
Ex welded enclosure	RNM-410-NM-310-00	0	2016.10.12.
Ex. Data plate	RNM-400-NI-050-0L	0	2014.02.07.
Ex Threaded plug 1/2" NPT	TNP-561-8M-000-03	0	2004.12.15.
Ex. Printed cover	RNM-410-RF-400-00	0	2015.12.15.
Ex NIVOSWITCH RNM-400 R-card RNM4PR01.SCH electrical schematic diagram	RNM-400-PM-210-00 (RNM4PR01.SCH)	0	2016.09.14.
„R" card, parts list	RNM-400-PM-210-00		2016.09.14.

Document Title:	Document Reference No.:	Rev.:	Date:
Ex NIVOSWITCH RNM-400 P-card RF400P01.SCH electrical schematic diagram	RFM-400-0M-212-00 (RF400P01.SCH)	0	2016.09.12.
„P" card, parts list	RFM-400-0M-212-00		2016.09.12.
Routine Test for NIVOSWITCH R_ _-4_ _-_Ex	RNM-400-PM-060-0U	1	2016.09.12.
User's Manual	rfm4000a0600h_04	04	2016.
Certificate of Conformity	IECEx EPS 11.0004X	Issue 1	2013.01.22.
Certificate of Conformity	IECEx EPS 13.0045U	Issue 0	2014.02.07.
Certificate of Conformity	IECEx PTB 06.0081 U	Issue 1	2012.01.27.
data sheet of installed materials resp. components	different		