



**Operating instructions**  
**For**  
**Vibration level switch**

**Model NSV**

Order from: **C A Briggs Company**

622 Mary Street; Suite 101; Warminster, PA 18974

Phone: 267-673-8117 - Fax: 267-673-8118

[Sales@cabriggs.com](mailto:Sales@cabriggs.com) - [www.cabriggs.com](http://www.cabriggs.com)



## 1. Content

---

1. Content .....	2
2. Note .....	3
3. Instrument Inspection.....	3
4. Regulation use .....	3
5. Operating Principle.....	4
6. Mechanical Connection.....	5
7. Electrical connection .....	7
8. Commissioning.....	7
9. Maintenance .....	8
10. Technical information .....	9
11. Order Codes .....	10
12. Dimensions, standard models .....	10
13. Safety Instructions (ATEX).....	11
14. Installation in classified zone (ATEX) .....	12
15. Label Description (ATEX).....	13
16. Dimensions, ATEX models .....	13
17. Declaration of conformance (ATEX).....	14
18. Declaration of conformance .....	15
19. ATEX Certificate.....	16
20. Notes.....	19

### Manufactured by:

Kobold Mesura S.L.U  
Avda. Conflent 68, nave 15  
08915 Badalona  
Tel.: +34 93 460 38 83  
Fax: +34 93 460 38 76  
E-Mail: [info.es@kobold.com](mailto:info.es@kobold.com)  
Internet: [www.kobold.com](http://www.kobold.com)

june 2017

## **2. Note**

---

Please read these operating instructions before unpacking and putting the unit into operation. Follow the instructions precisely as described herein.

The devices are only to be used, maintained and serviced by persons familiar with these operating instructions and in accordance with local regulations applying to Health & Safety and prevention of accidents.

When used in machines, the measuring unit should be used only when the machines fulfil the EC-machine guidelines.

## **3. Instrument Inspection**

---

Instruments are inspected before shipping and sent out in perfect condition. Should damage to a device be visible, we recommend a thorough inspection of the delivery packaging. In case of damage, please inform your parcel service / forwarding agent immediately, since they are responsible for damages during transit.

### **Scope of delivery:**

The standard delivery includes:

- Level Monitor for Bulk model: NSV
- Operating instructions

## **4. Regulation use**

---

The Level Monitor is designed for the selective level monitoring of bulk materials, especially for bulk material with low bulk density. This level monitor is not sensitive to material dampness and can be employed regardless of the composition of the bulk material.

Any use of the Level Monitor for Bulk, model: NSV, which exceeds the manufacturer's specification may invalidate its warranty. Therefore, any resulting damage is not the responsibility of the manufacturer. The user assumes all risk for such usage.

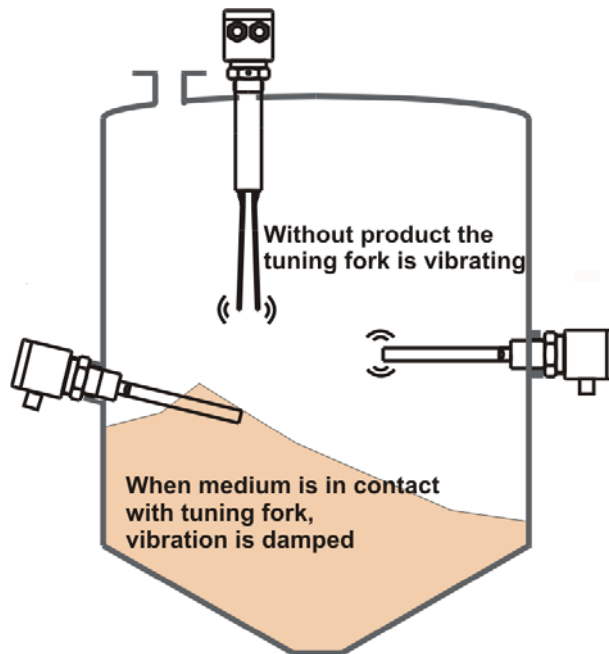
## 5. Operating Principle

---

The Level Monitor model NSV has decisive advantages, especially with bulk goods with low bulk density.

The sensor consists of a connecting head, which contains the electronics, and an adaptor with an oscillating fork. The latter is responsible for the direct contact with the bulk material. Two piezoelectric crystals start the fork vibrating at about 100 Hz. As soon as the fork is covered with the bulk material its vibration is dampened. This damping is detected in a pluggable evaluation module and transformed into a potential-free limit contact. With the aid of a selector switch (A and B) the relay can be switched on or off with every contact of the fork with the bulk material. At the same time, the electronics in the connecting head triggers the output relay. The electronics in the connecting head consists of a maintenance-friendly plug-in module that is fitted with an LED voltage supply indicator and an additional LED that lights up whenever the fork touches the medium.

In addition to the standard version NSV-8200, the devices can also be provided for vertical installation with an extended neck pipe (NSV-8201). The maximum length of the neck pipe is 3000 mm. The plug-in evaluation module can be changed easily so that the devices are really easy to maintain.



---

## 6. Mechanical Connection

---

### Before installation:

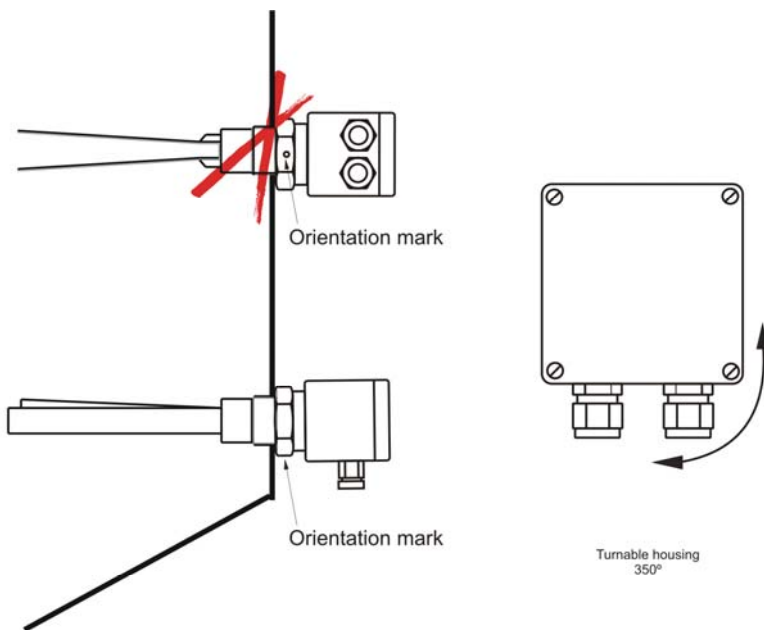
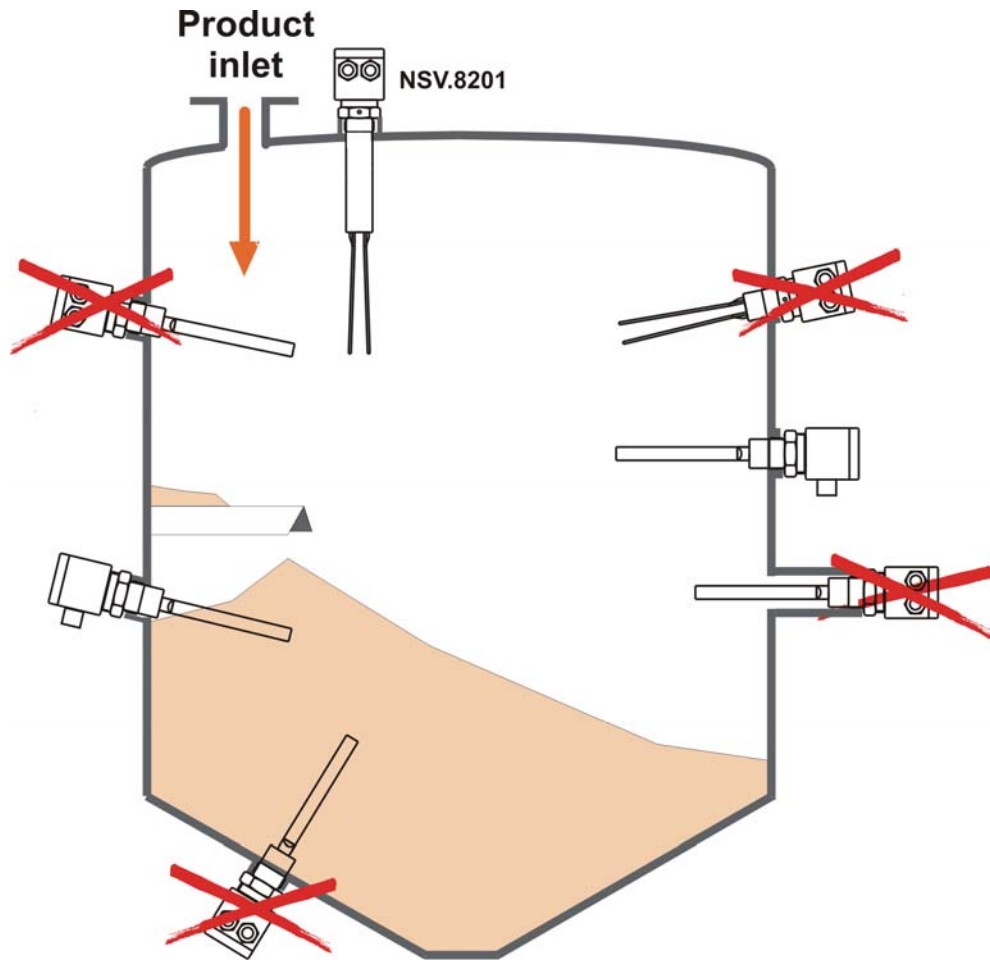
- Remove all packing materials and transport retainers and ensure that no such materials remain in the device.
- Make sure that the permitted max. operational pressure and temperature limits are not exceeded (see chapter 10 Technical Information)
- The units may not be installed at a location within an inductive field.
- If possible, check directly after mechanical installation whether the connection thread to the pipe is fully sealed.

### INSTALLATION OF THE NSV VIBRATION LEVEL MONITOR

The NSV series vibration level monitor is physically connected with a 1 ½" male thread. For installation you should use the hexagonal adaptor (60 mm spacing) of a suitable wrench.

### THE FOLLOWING MUST BE OBSERVED UNDER ALL CIRCUMSTANCES:

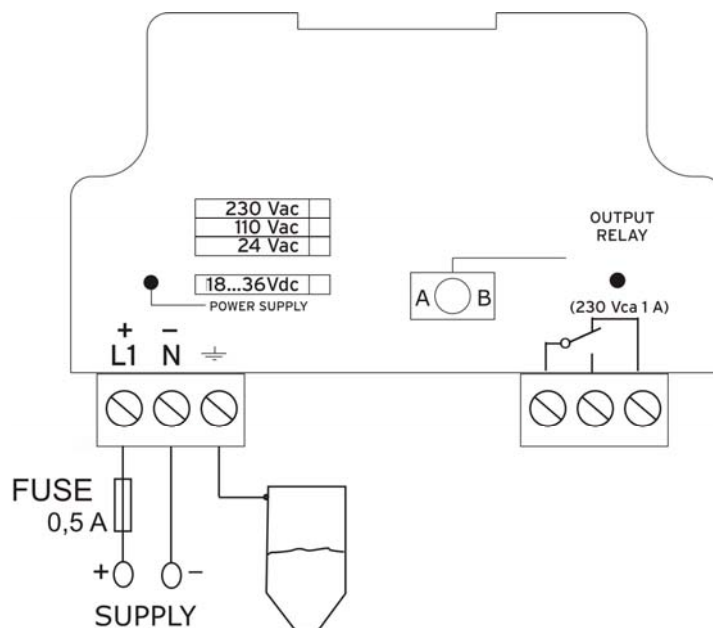
- When the bulk material container is being filled, the NSV level monitor must not come into contact with the inflowing medium.
- If this is however not possible, the vibrating fork must be fitted with a suitable protective covering.
- Make sure that the fork is always positioned correctly inside the bulk container and that no bulk material deposit is formed on it, since this can result in incorrect readings. If the NSV level monitor is built in laterally you must ensure that the markings on the adaptor are vertical in relation to the side of the container.
- When the NSV vibration level monitor is installed vertically a minimum distance must be maintained between the fork and the container wall otherwise this area could be filled with a deposit of the bulk material.
- Whenever possible the NSV level monitor should be fitted with a slight downward inclination. This prevents bulk material sticking to the vibrating fork when the container is being emptied.
- The level monitor should also be installed in such a position that there are no parts in its immediate vicinity that could trigger vibrations in the inside of the container, since this can also lead to incorrect readings or damage.
- For correct positioning the connection head (resp. cable bushing) is 350° rotatable.



Exemple of right installation

When NSV is mounted horizontally, verify that orientation mark on the nut of the process connection remains in the bottom of the nut

## 7. Electrical connection



The voltage supply to the NSV level monitor is via the connecting terminals L1 (+) and N(-). Suitable **safety fuses** are to be built in to the electric input lead. The green LED indicates that there is power to the device. Before connecting the device **check** that the supply voltage matches the characteristics of the NSV level monitor.

## 8. Commissioning

### RELAY OPERATION

When the red LED lights up, this indicates contact between vibrating fork and medium. Ensure that the red LED works independently of the position of the SELECTION SWITCH. As long as the fork vibrates, the red LED will not light up. As soon as the vibrating fork comes into contact with the bulk material the red LED indicator will light up.

### SELECTION SWITCH (A or B)

The on and off state of the output relay depends on the position of the SELECTION SWITCH.

**POSITION A:** The relay remains switched off as long as the medium does NOT touch the vibrating fork.

**POSITION B:** The relay remains switched on as long as the medium does NOT touch the vibrating fork.

## 9. Maintenance


---

The Level Monitor has to be controlled regularly for deposits of bulk material in the area of the vibration fork. Therefore we recommend a periodic cleaning. The connection housing should be checked periodically for mechanical damages to guarantee the indicated protection class.



## 10. Technical information

Note: Kobold Mesura makes every attempt to ensure the accuracy of these specifications but reserves the right to change them at any time.

Measuring principle:	vibration
Max. length of immersion length:	3000 mm
Medium temperature:	-20 to +80 °C
Ambient temperature:	-20 to +60 °C
Minimum density of bulk:	60 g/L
Fork material:	stainless steel (1.4305)
Housing material:	Polycarbonate, 350° turnable
Mechanical connection:	G 1 1/2, stainless steel (1.4305)
Electrical connection:	via 1 (2) cable gland M20x1.5
Supply voltage:	24, 110, 230 V <sub>AC</sub> 50/60 Hz or 18...36 V <sub>DC</sub>
Maximum power input:	1 VA
Relay output:	max. 250 V <sub>AC</sub> , 1 A
Max. pressure ( at 20 °C ):	25 bar
Protection:	IP 65
ATEX marking:	 II 1/2 D Ex tD A20/21 IP 65 T85°C -20 °C ≤ Ta ≤ +60 °C

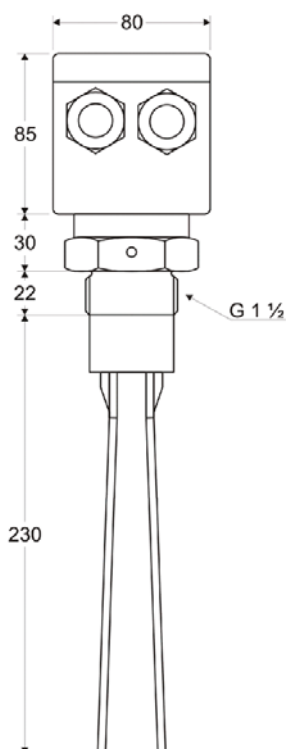
## 11. Order Codes

Order Details (Example: NSV-8 2 00 G8 0 0)

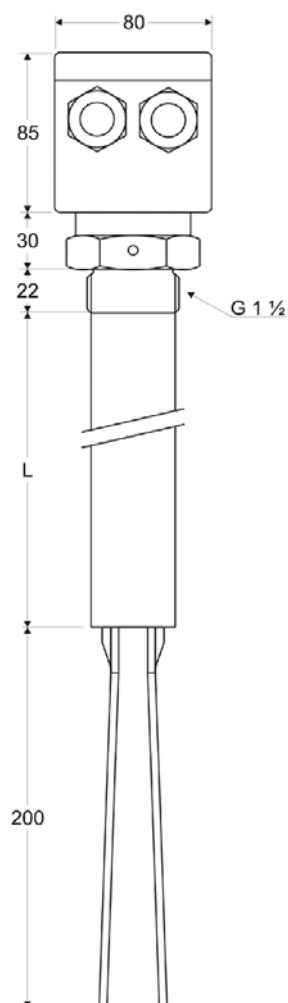
Model	Version	Material	Immersion length	Mechanical connection	ATEX	Supply voltage
NSV-	8 = standard	2 = stainless steel 1.4305	00 = standard, short version 01 = extended version (max 3m)	G8 = G1 ½	0 = without E = ATEX	0 = 230V <sub>AC</sub> 2 = 24V <sub>AC</sub> 3 = 18...36 V <sub>DC</sub> 4 = 100V <sub>AC</sub>

## 12. Dimensions, standard models

NSV-8200G800



NSV-8201G800



---

## **13. Safety Instructions (ATEX)**

---

### **1. Validity**

This safety instructions must be applied to the ATEX-conform vibration level switch series NSV....E, used in dust explosion hazard environments, category 1/2 D.

### **2. General considerations.**

Working principle of level switches NSV...E is vibrating fork, generated with a piezo electric oscillator fixed to a tuning fork. Detection is done with a piezo electric sensor that is measuring the amplitude difference when fork is in contact or not with the product. It can be used also in hazardous zones.

They are designed to be used in explosion-proof areas classified as group II, category 1/2D.

Sensor element can be installed in hazardous areas category 1 under ATEX approval 1/2D Ex tD.

The mechanical side of the instrument (thread connection and tuning fork) can be installed in hazardous areas category 2, as mentioned in ATEX approval 1/2D Ex tD.

When installing the device it is necessary to follow all instructions and regulations for explosion-proof areas and the safety instructions included in this manual. Inlet bushings and electrical connections must conform to the certification for their type in accordance with the directive.

Verify that label contents fits requirements of application.

All requirements of the 2014/34/EU Directive must be correctly followed and also the national rules related to measurement instruments used in hazardous areas. For instance: EN 60079-0, EN 60079-31 and all the other ones related to the required certification.

Remove power supply before opening cover of the housing or at least be sure that no explosion risk is present.

Check that cover of housing is correctly mounted before applying power to the instrument.

Verify that there is no mechanical stress due to installation on the tank.

It is very important to verify that the instrument ground and the system ground are correctly connected.

The installation of instruments in hazardous areas must be exclusively done by trained people.

### 3. Protection against electrostatic discharge

Level switches with plastic parts that can acquire electrostatic charges, must have a corresponding warning label.

Avoid situations of electrostatic discharges like:

- Avoid friction on plastic parts.
- Avoid cleaning with a dry cloth
- Avoid installing close the steam sources or pneumatic product sources.

### 4. Chemical resistance:

Verify that materials of the instrument are chemically compatible with the product to measure and application.

## 14. Installation in classified zone (ATEX)

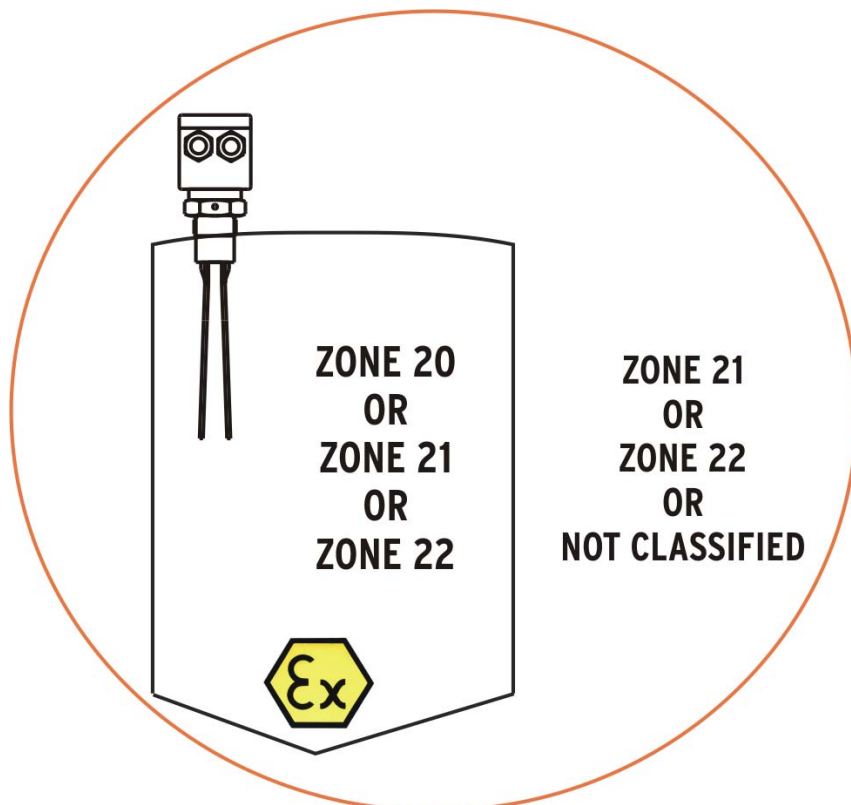
---

In classified zones, NSV. ATEX version, must be installed with the housing in zone 21,22 (category 2) or NOT CLASSIFIED.

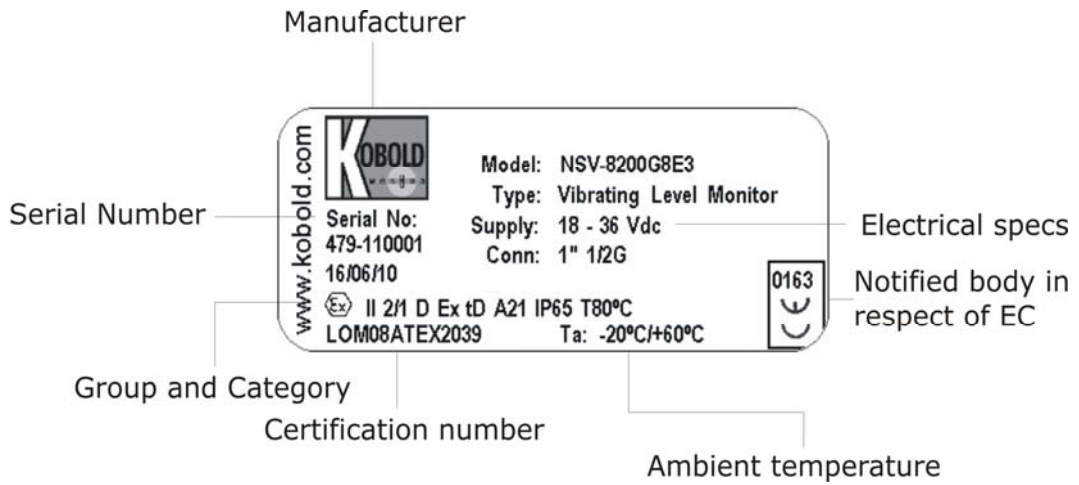
Process connection is mounted in the border wall between areas of category 2 and 1.

fork can be mounted in ZONE20 (Category 1).

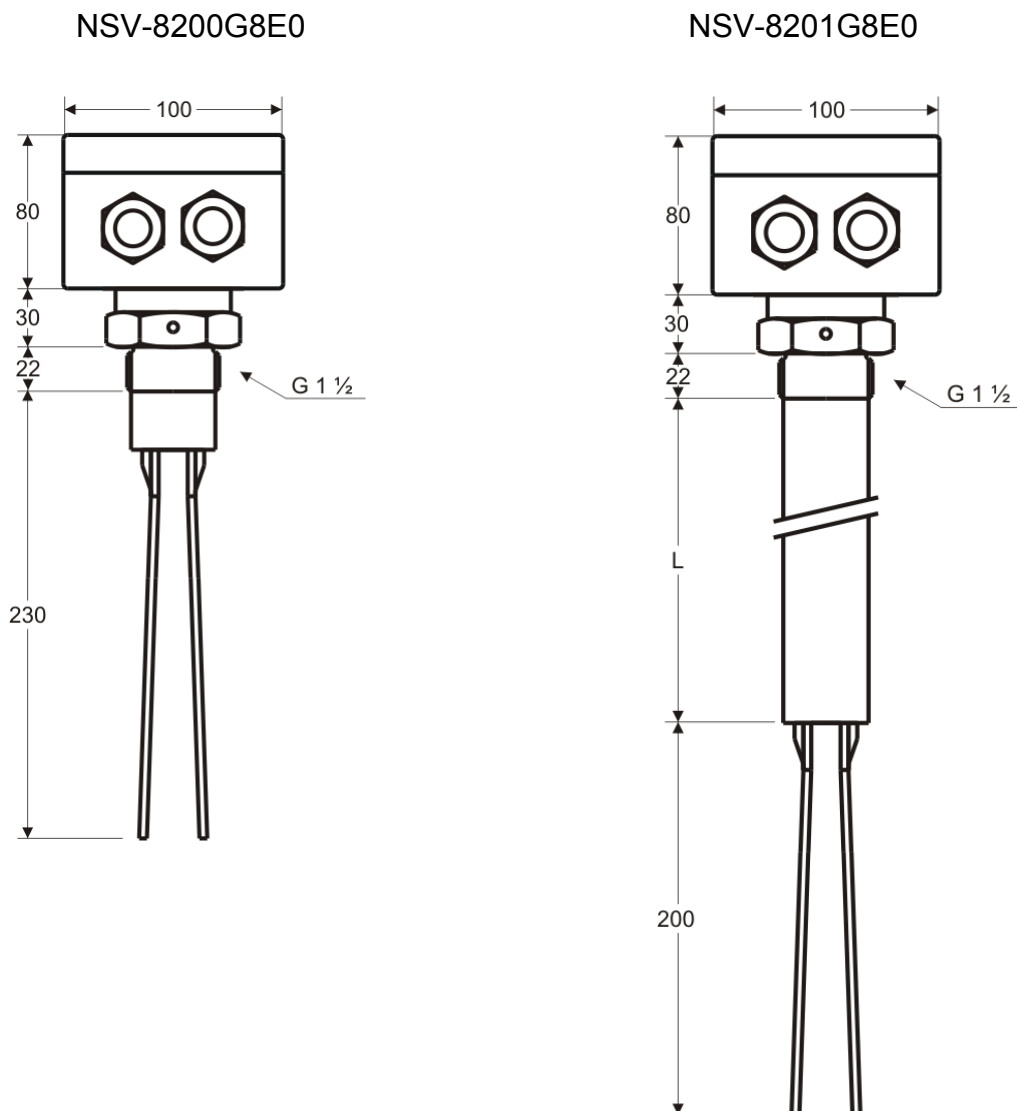
Installation must be done by people trained in ATEX environments.



## 15. Label Description (ATEX)



## 16. Dimensions, ATEX models



## 17. Declaration of conformance (ATEX)

DT0323

### DECLARACIÓN DE CONFORMIDAD EU

EU DECLARATION OF CONFORMITY  
EU-KONFORMITÄTSERKLÄRUNG  
DÉCLARATION DE CONFORMITÉ  
DICHIARAZIONE DI CONFORMITÀ EU

**KOBOLD MESURA S.L.U.**  
Avda. Conflent 68 nave 15, 08915 Badalona (España)

#### Declara, bajo la propia responsabilidad, que el producto

Declares under our sole responsibility, that the product  
Erklärt in alleiniger Verantwortung, dass das Produkt  
Déclare sous sa seule responsabilité, que le produit  
Dichiara sotto la propria responsabilità, che il prodotto

**SOLIVIB....E.. / NSV....E..**

#### A los cuales se refiere esta declaración, son conformes a las siguiente Directivas Europeas:

To which this declaration relates is in conformity with the following European Directives:  
Mit folgenden Richtlinien konform ist:  
À auxquels se réfère cette déclaration, ils sont conformes aux Directives Européennes suivant :  
A ai quali si riferisce questa dichiarazione, sono conformi alle direttive europee seguente:

**EMC2014/30/EU LVD2014/35/EU ATEX2014/34/EU RoHS2011/65/EU**

#### Normas armonizadas y documentos de la normativa aplicados:

Applied harmonised standards and normative documents:  
Angewandte harmonisierte Normen oder normative Dokumente:  
Normes harmonisées et documents normatifs appliqués  
Norme armonizzate e documenti normativi applicati:

EN61010-1 :2011                      EN61241-1:2004 (acc. EN60079-31 :2016)  
EN61000-6-1 :2007                  EN61241-0:2006 (acc. EN60079-0 :2013)  
EN61000-6-3:2007

#### Certificado de examen CE de tipo

EC-type examination certificat  
EG-Baumusterprübescheinigung  
Attestation d'examen CE de type  
Certificazione per esame di tipo CE

#### Marcado

Marking  
Markierung  
Inscription  
Marcatura

**LOM 08ATEX2039**



II 1/2D Ex tD A20/A21 IP65 T80°C  
-20°C ≤ Ta ≤ 60°C

**Fabricado en:** KOBOLD MESURA SLU Avda. Conflent 68 nave 15, 08915 BADALONA (Spain)

Made in:  
Hergestellt in:  
Fabriqué dans:  
Fabbricato in:

#### Organismo notificado:

**LOM 0163**

Notified organism  
Zertifizierungsstelle  
Organization annoncée  
Organismo informato

#### Número notificación :

**LOM 05ATEX9070**

Number notification  
Zertifikatsnummer  
Nombre notification  
Notifica di numero

Badalona june 2017

Gerente  
Azzam Charmand

## 18. Declaration of conformance

DT0323

### **DECLARACIÓN DE CONFORMIDAD EU**

*EU DECLARATION OF CONFORMITY  
EU-KONFORMITÄTSEKTLÄRUNG  
DÉCLARATION DE CONFORMITÉ  
DICHIARAZIONE DI CONFORMITÀ EU*

**KOBOLD MESURA S.L.U.**  
**Avda. Conflent 68 nave 15, 08915 Badalona (España)**

#### **Declara, bajo la propia responsabilidad, que el producto**

*Declares under our sole responsibility, that the product  
Erklärt in alleiniger Verantwortung, dass das Produkt  
Déclare sous sa seule responsabilité, que le produit  
Dichiara sotto la propria responsabilità, che il prodotto*

**SOLIVIB..... / NSV....**

#### **A los cuales se refiere esta declaración, son conformes a las siguientes Directivas Europeas:**

*To which this declaration relates is in conformity with the following European Directives:  
Mit folgenden Richtlinien konform ist:  
À auxquels se réfère cette déclaration, ils sont conformes aux Directives Européennes suivant :  
A ai quali si riferisce questa dichiarazione, sono conformi alle direttive europee seguenti:*

**EMC2014/30/EU LVD2014/35/EU RoHS2011/65/EU**

#### **Normas armonizadas y documentos de la normativa aplicados:**

*Applied harmonised standards and normative documents:  
Angewandte harmonisierte Normen oder normative Dokumente:  
Normes harmonisées et documents normatifs appliqués  
Norme armonizzate e documenti normativi applicati:*

EN61010-1 :2011  
EN61000-6-1:2007  
EN61000-6-3:2007

**Fabricado en: KOBOLD MESURA SLU Avda. Conflent 68 nave 15, 08915 BADALONA (Spain)**


*Made in:  
Hergestellt in:  
Fabriqué dans:  
Fabbricato in:*

Badalona June 2017


Gerente  
Azzam Charmand



# 19. ATEX Certificate



**LABORATORIO OFICIAL J. M. MADARIAGA**



**(1) EC-TYPE EXAMINATION CERTIFICATE**

**(2) Equipment or protective system intended for use in potentially explosive atmospheres  
Directive 94/9/EC**

**(3) EC-Type Examination Certificate nr **LOM 08ATEX2039****

**(4) Equipment or protection system**      Vibrating switch levels  
Types SOLIVIB...E... / NSV...E...

**(5) Applicant**      **KOBOLD MESURA, S.L.U.**

**(6) Address**      Grifé, 655  
08918- Badalona (BARCELONA)  
SPAIN

**(7) This equipment or protective system and any acceptable variation thereto is specified in the schedule to this certificate and the documents therein referred to.**

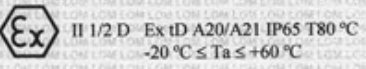
**(8) Laboratorio Oficial J.M. Madariaga (LOM), notified body number 0163 in accordance with Article 9 of the Directive 94/9/EC of the European Parliament of 23 March 1994, certifies that this equipment or protective system has been found to comply with the Essential Health and Safety Requirements relating 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 confidential report nr. **LOM 08.082 WP****

**(9) Compliance with the Essential Health and Safety Requirements has been assured by compliance with:**  
- Standards      **EN 61241-0:2006**      **EN61241-1:2004**

**(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 and construction of this specified equipment or protective system in accordance with the Directive 94/9/EC. Further requirements of the Directive apply to the manufacture and supply of this equipment or protective system. These are not covered by this certificate.**

**(12) The marking of the equipment or protective system shall include the following:**




**Ex II 1/2 D Ex tD A20/A21 IP65 T80 °C  
-20 °C ≤ Ta ≤ +60 °C**

Madrid, 22<sup>nd</sup> June 2008

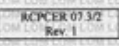


**Carlos Fernández Ramón**  
DIRECTOR OF THE LABORATORY




**Angel Vega Remesal**  
Head of the ATEX

This Certificate is a translation from the original in Spanish. The LOM liability applies only on the Spanish text  
*(This document may only be reproduced in its entirety and without any change)*      Page 1 / 3



UNIVERSIDAD POLITÉCNICA DE MADRID  
ENSAYOS E INVESTIGACIONES DE MATERIALES Y EQUIPOS PARA ATMÓSFERAS EXPLOSIVAS Y MINERÍA  
( Real Decreto 334/1992 de 3 de Abril - BOE 1992-04-29)



Alenza, 1 - 28003 MADRID • ☎ (34) 91 4421366 / 91 3367009 • ✉ (34) 91 4419933 • ✉ lom@lom.upm.es





# LABORATORIO OFICIAL J. M. MADARIAGA

## (A1) SCHEDULE

(A2) EC-Type Examination Certificate: **LOM 08ATEX2039**

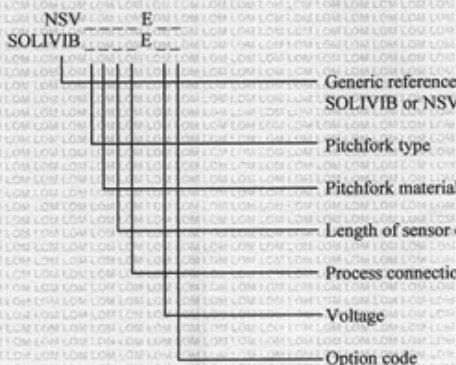
## (A3) Description of equipment or protective system

Level sensor intended for solids which operates by a vibrating diapason powered by a piezoelectric device. It has a category 2D metallic enclosure which contains the electronic devices and a category 1D diapason. The whole device have different threaded adapters as process connection, typically tanks and silos. The output signal is by means of a relays.

The power supply can be done at 230 Vac, 110 Vac, 24 Vac and 18-36 Vdc

The device is foreseen to be commercialised with two type references: SOLIVIB and NSV

### Type codification



(A4) Test report nr **LOM 08.082 WP**

(A5) Special conditions for safe use

None

(A6) Individual tests

None

(A7) Essential Health and Safety Requirements

Explosion safe requirements are covered by application of the standards indicated in page 1/3 of this certificate.



This Certificate is a translation from the original in Spanish. The LOM liability applies only on the Spanish text

RCP/IBR 07.32 Rev. 1

(This document may only be reproduced in its entirety and without any change)

Page 2 / 3



**LABORATORIO OFICIAL J. M. MADARIAGA**

**(A1) SCHEDULE**

**(A2) EC-Type Examination Certificate: LOM 08ATEX2039**

**(A8) Descriptive Documents**

Description nr.:	DT0315	Rev.	Date
Marking sheet nr.:	DT0331	-	2008-02-11
Type codification nr.:	DT0333	-	2008-02-05
Component list nr.:	DT:0117 (4 sheets)	2	2007-07-10
Drawings nr.:	PE0199 (5 sheets)	1	2008-02-05
	DT0202	0	2007-07-10
	DT0203	0	2007-07-10
	DT:0115R1	1	2007-07-10
	DT:0116R1	1	2007-07-10
	PM0561R0	0	2008-01-30
	PM0381R0	0	2004-10-20
	PM0366R0	0	2004-09-02
	PM0367R0	0	2004-09-02
	PM0557R0	0	2008-01-30
	PM0558R0	0	2004-09-20



This Certificate is a translation from the original in Spanish. The LOM liability applies only on the Spanish text

RECEIVED 07/32  
Rev. 1

(This document may only be reproduced in its entirety and without any change)

Page 3 / 3

**20. Notes**

---

KOBOLD MESURA S.L.U  
Avda. Conflent 68, nave 15  
08915 Badalona  
Tel.: +34 93 460 38 83  
Fax: +34 93 460 38 76  
E-Mail: [info.es@kobold.com](mailto:info.es@kobold.com)  
[www.kobold.com](http://www.kobold.com)

Technical data  
Subject to change without prior notice

