Operating instructions

For

Vibrating level switch

Model NSV

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Manufactured by:

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Internet: www.kobold.com

March 2024

2. Note

Please read these operating instructions before unpacking and putting the unit in operation. Follow the instructions precisely as described herein.
The instruction manuals on our website WWW.kobold.com are always for currently manufactured version of our products. Due to technical changes, the instruction manuals available online may not always correspond to the product version you have purchased. If you need an instruction manual that correspond to the purchased product version, you can request it from us free of charge by email (info.de@kobold.com) in PDF format, specifying the relevant invoice number and serial number. If you wish, the operating instructions can also be sent to you by post in paper form against an applicable postage fee.

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.

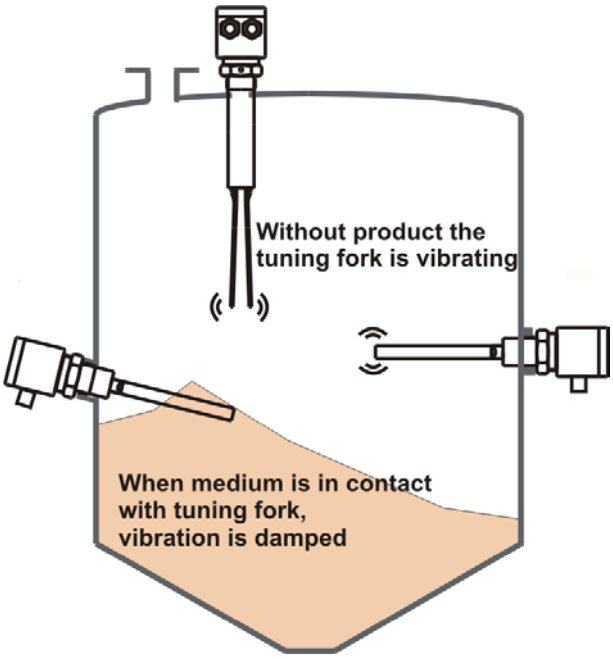
Any use of the Level Monitor for Bulk, model: NSV, which exceeds the manufacturer’s specification may invalidate its warranty. Therefore, any resulting damage is not the responsibility of the manufacturer. The user assumes all risk for such usage.

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:

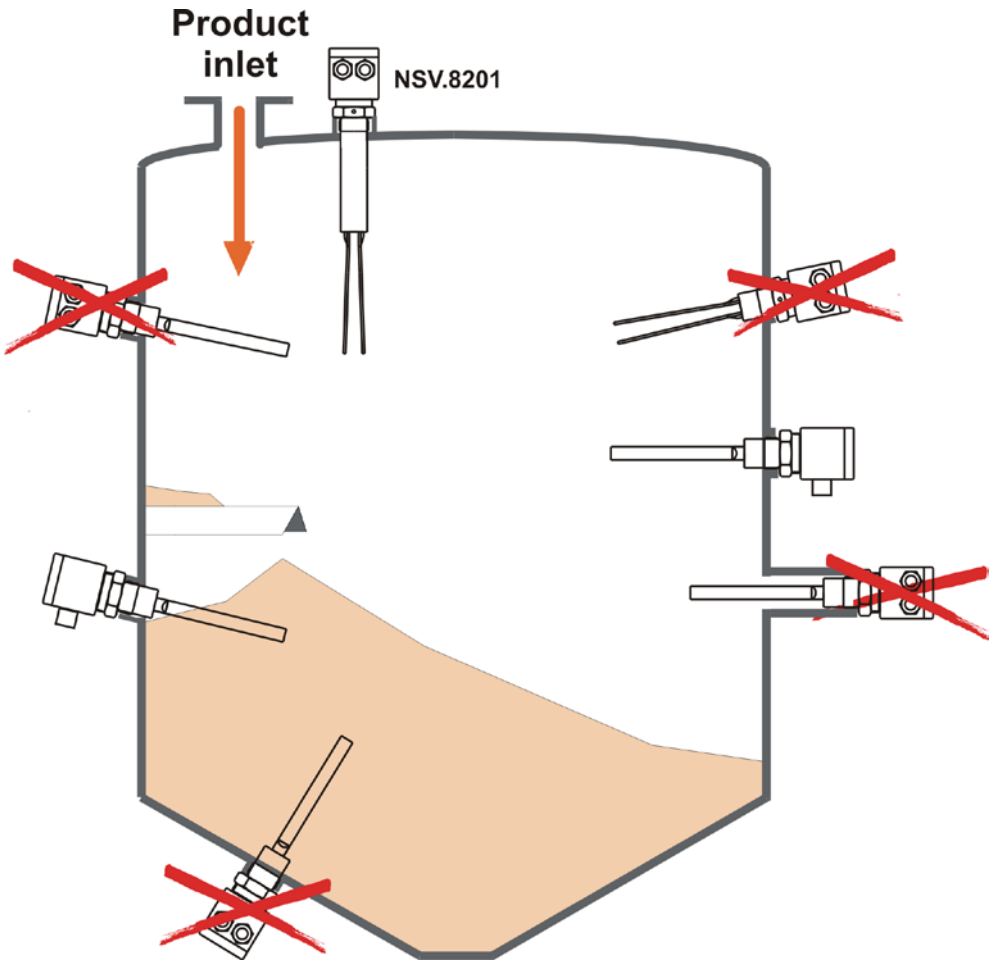
- Remove all packing materials and transport retainers and ensure that no such materials remain in the device.
- Make sure that the permitted max. operational pressure and temperature limits are not exceeded (see chapter 10 Technical Information)
- The units may not be installed at a location within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

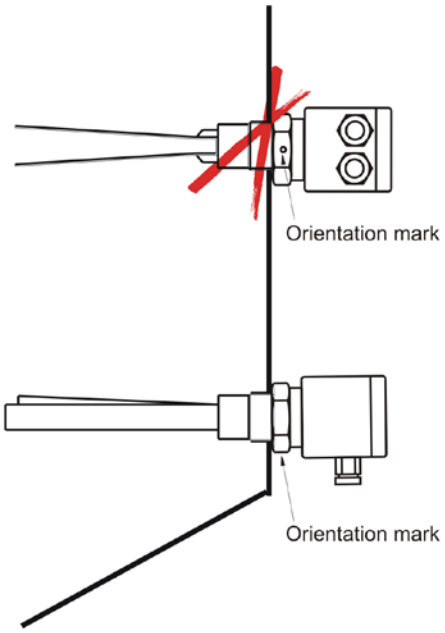
INSTALLATION OF THE NSV VIBRATION LEVEL MONITOR

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.

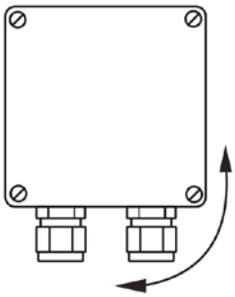
THE FOLLOWING MUST BE OBSERVED UNDER ALL CIRCUMSTANCES:

- 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 350º rotatable.



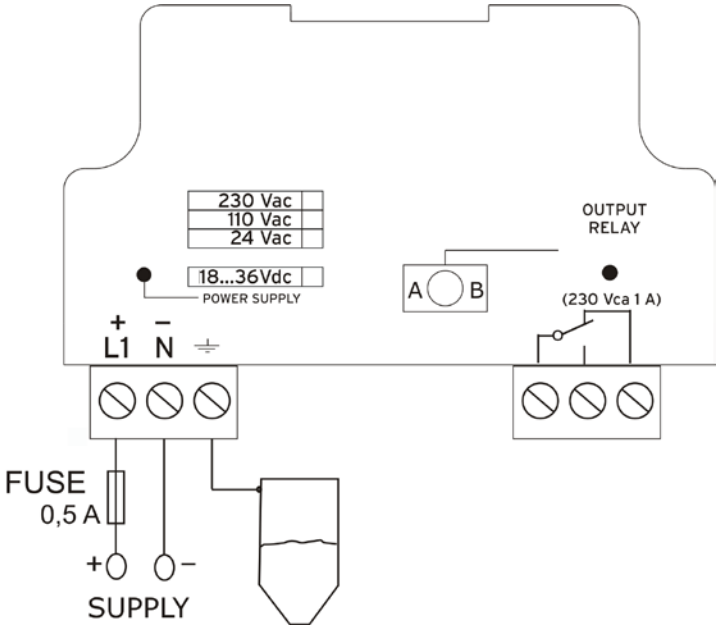


When NSV is mounted horizontally, verify that orientation mark on the nut of the process connection remains in the bottom of the nut



Exemple of right installation

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_{AC} 50/60 Hz or 18...36 V_{DC}
Maximum power input:	1 VA
Relay output:	max. 250 V_{AC}, 1 A
Max. pressure (at 20 ºC):	25 bar
Protection:	IP 65
ATEX marking:	Ⓔx II 1/2 D Ex tD A20/21 IP 65 T85°C -20 °C ≤ Ta ≤+60 °C

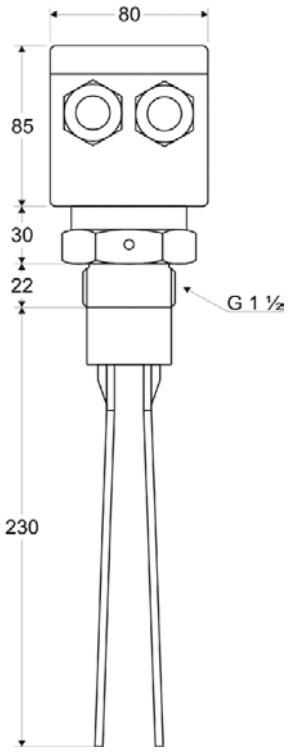
11. Order Codes

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

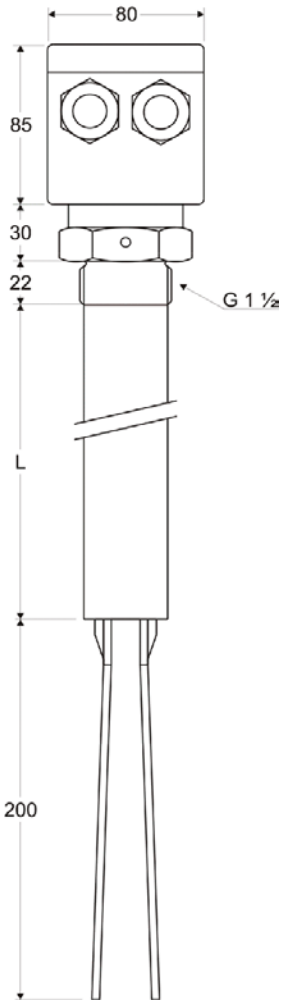
Model	Version	Material	Immersion length	Mechanical connection	ATEX	Supply voltage
NSV-	**8 =** standard	**2** = stainless steel 1.4305	**00** = standard, short version **01** = extended version (max 3m)	**G8** = G1 ½	**0** = without **E** = ATEX	**0** = 230V_{AC} **2** = 24V_{AC} **3** = 18…36 V_{DC}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

12. Dimensions, standard models

NSV-8200G800



NSV-8201G800



13. Safety Instructions (ATEX)

13.1 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.

13.2 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 fit 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.

13.3 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:

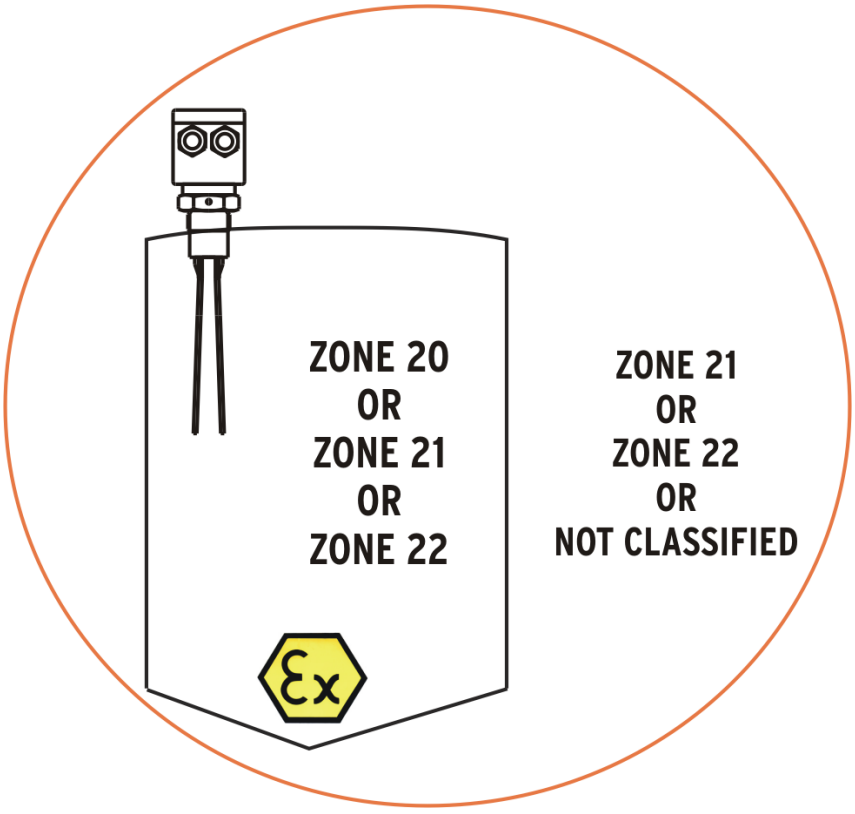
-Avoid friction on plastic parts.
-Avoid cleaning with a dry cloth
-Avoid installing close the steam sources or pneumatic product sources.

13.4 Chemical resistance:

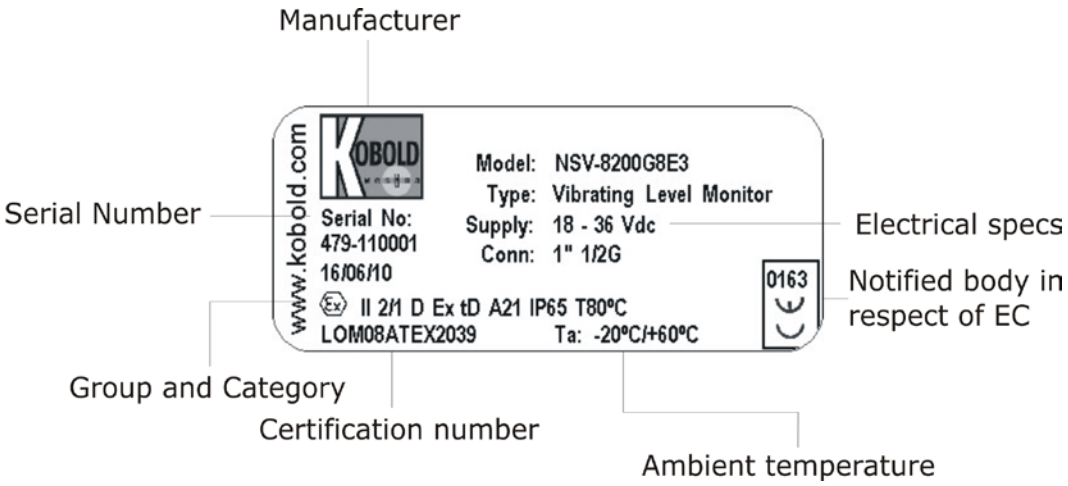
Verify that materials of the instrument are chemically compatible with the product to measure and application.

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.

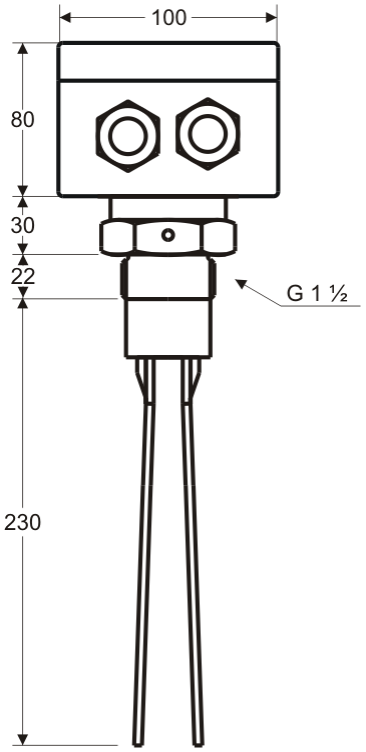


15. Label Description (ATEX)

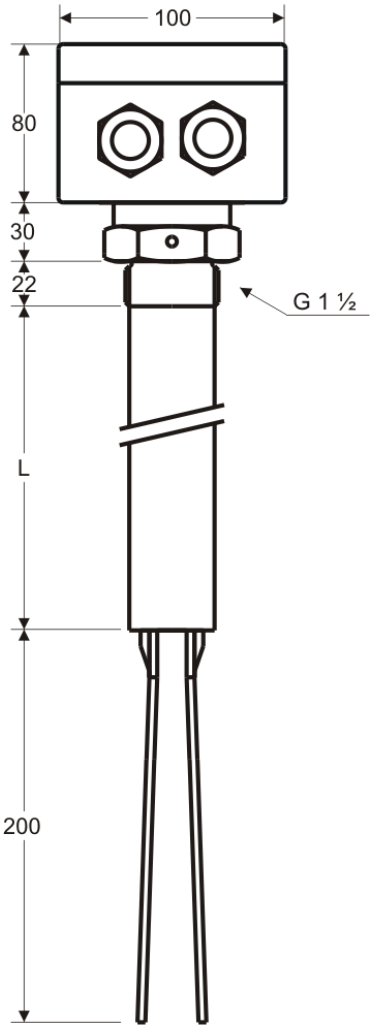


16. Dimensions, ATEX models

NSV-8200G8E0



NSV-8201G8E0



17. Declaration of conformity (ATEX)

DT0323

DECLARACIÓN DE CONFORMIDAD EU

EU DECLARATION OF CONFORMITY
EU-KONFOMITÄTSERKLÄRUNG
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 propia 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:
An auf das diese Erklärung verweist, sie mit den Europäischen Richtlinien im Einklang stehen folgend:
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 normativer Dokumente:
Normes harmonisées et documents normatifs appliqués
Norme armonizzate e documenti normativi applicati:

EN61010-1 :2010
EN61000-6-1 :2019
EN61000-6-3:2007
EN61241-1:2004 (acc. EN60079-31 :2014)
EN61241-0:2006 (acc. EN60079-0 :2018)

Certificado de examen CE de tipo
EC-type examination certificat
EG-baumusterprübescheinigung
Attestation d´examen CE de type
Certificazione per esame di tipo CE

LOM 08ATEX2039

Marcado
Marking
Markierung
Inscription
Marcatura

II 1/2D Ex tD A20/A21 IP65 T80ºC
-20ºC ≤ Ta ≤ 60ºC

Fabricado en: **KOBOLD MESURA SLU Avda. Conflent 68 nave 15, 08915 BADALONA (Spain)**
Made in:
Hergesteltlt in:
Fabriqué dans:
Fabbricato in:

Organismo notificado:
LOM 0163

Notified organism
Mitgeteilter Organismus
Organization annoncée
Organismo informato

Número notificación :
LOM 05ATEX9070

Number notification
Zahlmitteilung
Nombre notification
Notifica di numero

Badalona March 2024

Gerente
Azzam C

18. EU Declaration of conformity

DT0323

DECLARACIÓN DE CONFORMIDAD EU

EU DECLARATION OF CONFORMITY
EU-KONFOMITÄTSERKLÄRUNG
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
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Dichiara sotto la propia responsabilità, che il prodotto

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

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To which this declaration relates is in conformity with the following European Directives:
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EMC2014/30/EU LVD2014/35/EU RoHS2011/65/EU

Normas armonizadas y documentos de la normativa aplicados:
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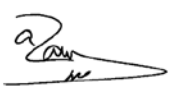
Angewandte harmonisierte Normen oder normativer Dokumente:
Normes harmonisées et documents normatifs appliqués
Norme armonizzate e documenti normativi applicati:

EN61010-1:2010
EN61000-6-1:2019
EN61000-6-3:2007

Fabricado en: **KOBOLD MESURA SLU Avda. Conflent 68 nave 15, 08915 BADALONA (Spain)**
Made in:
Hergesteltlt in:
Fabriqué dans:
Fabbricato in:

Badalona March 2024

Gerente
Azzam Charmand



19. UK Declaration of conformity

DT0662

DECLARACIÓN DE CONFORMIDAD UK

UK DECLARATION OF CONFORMITY
UK-KONFOMITÄTSERKLÄRUNG
DÉCLARATION DE CONFORMITÉ UK
DICHIARAZIONE DI CONFORMITÀ UK

KOBOLD MESURA SLU
Avda. Conflent, 68 nave 15 08915 Badalona (España)

We Kobold Mesura S.L.U. declare under our sole responsibility that the product:

Level switch NSV-..

To which this declaration relates is in conformity with the standards noted below:

BS EN 61010-1:2010

Safety requirements for electrical equipment for measurement,controL, and laboratory use. General requirements

BS EN 61000-6-2:2007

Electromagnetic compatibility (EMC) -- Part 6-2: Generic standards - Immunity for industrial environments

Also, the following UK guidelines are fulfilled:

S.I. 2016/1091 Electromagnetic Compatibility Regulations 2016.

S.I. 2016/1101 Electrical Equipment (Safety) Regulations 2016.

S.I. 2012/3032 The Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment Regulations 2012.

Badalona Dec. 2021 Gerente

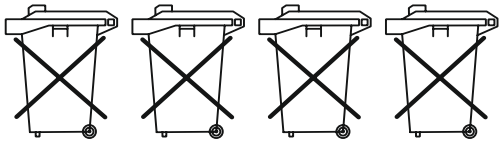
20. Disposal

Note!

- Avoid environmental damage caused by media-contaminated parts
- Dispose of the device and packaging in an environmentally friendly manner
- Comply with applicable national and international disposal regulations and environmental regulations.

Batteries

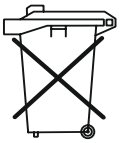
Batteries containing pollutants are marked with a sign consisting of a crossed-out garbage can and the chemical symbol (Cd, Hg, Li or Pb) of the heavy metal that is decisive for the classification as containing pollutants:



Cd[1] Hg[2] Pb[3] Li[4]

1. „Cd" stands for cadmium
2. „Hg" stands for mercury
3. „Pb" stands for lead
4. „Li" stands for lithium

Electrical and electronic equipment



21. ATEX Certificate

LABORATORIO OFICIAL J. M. MADARIAGA

EC-TYPE EXAMINATION CERTIFICATE

(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:

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

Madrid, 22nd June 2008

OFICIAL LABORATORIO J.M. MADARIAGA LOM

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

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RCPCER 07 3/2 Rev. 1

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

NSV _ _ _ _ E _ _
SOLIVIB _ _ _ _ E _ _

- Generic reference SOLIVIB or NSV
- Pitchfork type
- Pitchfork material
- Length of sensor element
- Process connection
- Voltage
- Option code

(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.

OFICIAL LABORATORIO J.M. MADARIAGA LOM

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

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LABORATORIO OFICIAL J. M. MADARIAGA

(A1) SCHEDULE

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

(A8) Descriptive Documents

		Rev.	Date
- Description nr.:	DT0315	-	2008-02-11
- Marking sheet nr.:	DT0331	-	2008-02-05
- 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

OFICIAL LABORATORIO J.M. MADARIAGA LOM

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Technical data
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