



Declaración UE de Conformidad EU-Declaration of Conformity

Nosotros/We

Talleres Filsa, S.A.U.

Bernat Metge, 33
E-08100 Mollet del Vallés
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por la presente declaramos bajo nuestra única responsabilidad, que los aparatos:
declares under our sole responsibility, that the product:

Controladores de nivel a pendulares / Pendulum limit switch



Tipo/Type **MS1- ...**

cumplen con las siguientes Normas Europeas:
conforms with the following European directives:

Normativa de baja tensión Low voltage directive 2014/35/EU

Aplicado según las Normas armonizadas o documentos normativos:
Applied harmonized standards or normative documents:

EN 61010-1:2010 EN 60529:1991 + A1:2000 + A2:2013

Y los aparatos marcados con  - cumplen adicionalmente con la siguiente Directiva Europea:
And the devices with  - marking conform additional with the following European directive:

Directiva ATEX ATEX directive 2014/34/EU

Dependiendo del modelo se cumple con las Normas armonizadas o documentos normativos:
Depending on the design applied harmonized standards or normative documents:

EN 60079-0:2012 + A11:2013 EN 60079-11:2012 EN 60079-31:2014

Certificado de examen CE de tipo número:
EU-Type Examination Certificate:

IBExU06ATEX1152

Aprobado por:
Issued by:

IBExU Institut für Sicherheitstechnik GmbH, 09599 Freiberg (0637)

Certificado de calidad mediante:
Quality assurance:

TÜV NORD CERT GmbH, 30159 Hannover (0044)

Mollet del Vallés, el 28 de Noviembre del 2016

Jordi Matutano Ros
QB

Esta Declaración podrá ser utilizada en tanto no haya sido alterada.
This declaration is only allowed to hand out in unchanged form.

Condiciones de Garantía

Talleres Filsa garantiza sus productos por un período de doce meses, a partir de la fecha de venta. Esta garantía cubre la reparación o sustitución de las piezas, materiales o equipos defectuosos, imputables a defectos de fabricación. El usuario correrá con los gastos de envío de los elementos defectuosos, hasta las instalaciones de Talleres Filsa.

La sustitución de las piezas, materiales o equipos defectuosos, no implicará prórroga de la garantía.

Quedan excluidas de esta garantía las averías o deterioros debidos a la utilización de nuestros productos para fines distintos a los que les son propios, o no hayan sido instalados de acuerdo con las instrucciones de instalación y utilización.

Quedan excluidas de esta garantía las piezas o equipos que hayan sido manipulados por personas no autorizadas por Talleres Filsa.

Quedan excluidas de esta garantía, las averías producidas por causas catastróficas (fuego, inundaciones...), atmosféricas, golpes y caídas.

Talleres Filsa al no efectuar la instalación de los aparatos que suministra, no responde de los daños directos o indirecto, causados por avería o defecto de sus materiales y productos y cualquier otra reclamación que de ellos pueda derivarse, a menos de que la ley lo disponga con carácter obligatorio.

Para validar la garantía, los materiales o productos deberán ir acompañados de la factura de compra.

Warranty Conditions

Talleres Filsa guarantees its products for a period of twelve months as from the date of sale. This guarantee covers the repair or substitution of the defective parts, materials or equipment that are imputable to manufacturing defects. The user will be responsible for the costs of returning the defective elements to the facilities of Talleres Filsa.

The substitution of defective parts, materials or equipment will not constitute an extension of the guarantee.

The breakdowns and deteriorations due to using our products for purpose other than those for which they were manufactured, or products which have not been installed in accordance with the instructions for installation and use are excluded from this guarantee .

The parts and equipment which have been manipulated by persons not authorised by Talleres Filsa are excluded from this guarantee..

The breakdowns caused by catastrophic conditions (fire, floods...), atmospheric conditions, knocks and falls are excluded from this guarantee.

Not having carried out the installation of the devices it supplies, Talleres Filsa accepts no responsibility for direct or indirect damage caused by breakdowns or defects of its materials or products and for any other claim which could be derived from these, unless otherwise obligatorily stipulated by the Law.

In order to validate the guarantee, the materials or products should be accompanied by proof of purchase.

► Read and follow these safety instructions first and take notice of the operating instructions.

Safety instructions

1. The installation, initial operation and maintenance may be done by a qualified expert with electrical know-how only.
2. Take notice of the local and statutory rules and regulations while the electrical connection and/or the VDE 0100.
3. Take notice of the characteristics at the data plate.
4. A fuse (with max. 4A) has to be connected in series to the voltage supply.
5. Protect the signal contact from voltage peaks when inductive loads are connected.
6. The device may put into operation only if it is closed
7. Switch off the power supply, before opening the device. (touchdangerous voltage)
8. Tear-off danger! Don't pour on the measuring cone. In case of full indication the filling process has to be stopped immediately.

Operating instructions

1. Description

1.1 Intended use

The level indicator observes the filling level as a limit switch in silos and containers. It can be used as full and empty indicator for dusty and powdery, granulated and grainy bulk goods with a max. grain size up to 100 mm and with a bulk weight of 0.3 ... 3 t/m³.

1.2 Function

Bulk goods, being dumped besides the pendulum, are moving the pendulum more and more aside, as the filling level increases. A signal switch registers this movement and evaluates it.

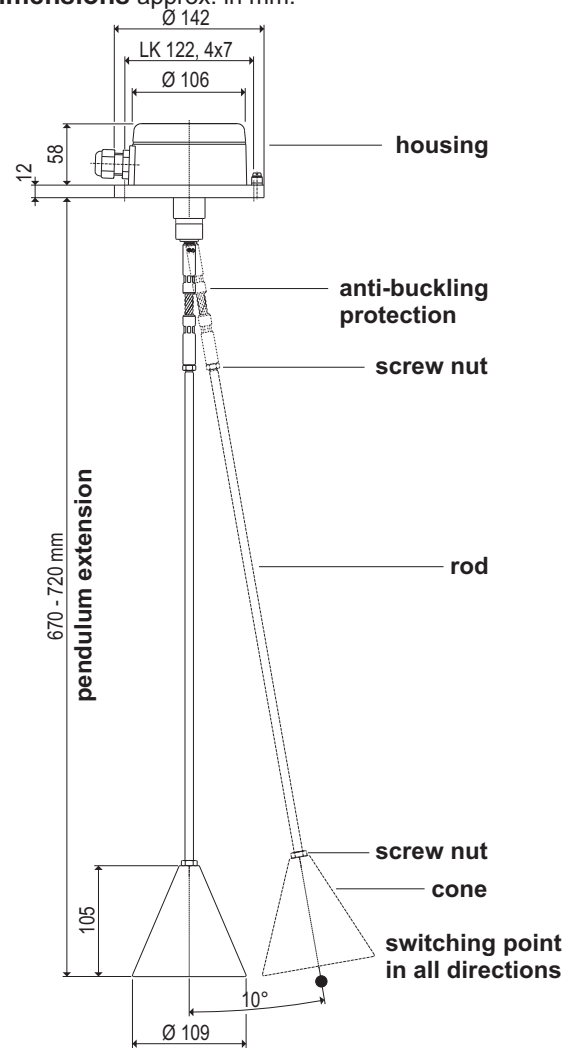
1.3 Technical data

Manufacturer	Talleres Filsa
Address	Bernat Metge, 33 08100 Mollet del Vallès (Barcelona-Spain)
Name	Pendulum level indicator
Type	MS-1
Bulk good temperature	T_s -25 °C ... +80 °C
Ambient temperature	T_a -20 °C ... +70 °C
Signal contact	change-over contact, potentialfree
Capacity of the contact	4 A / 250 V AC
Switching voltage	24 V ... 250 V AC or 12 V ... 125 V DC
Response delay	none
Cable entry	cable gland M16x1.5
Type of protection	IP 66 acc. to DIN EN 60529
Overpressure safety	up to 0.5 bar
Weight	1.15 kg
Maintenance	none
Mounting position	vertical, ± 3°

1.4 Materials

housing	GAL
rod	Aluminium or 304
measuring cone	Aluminium or 304
rubber parts	NBR, black
flexible union	S.S. 304

1.5 Dimensions approx. in mm.

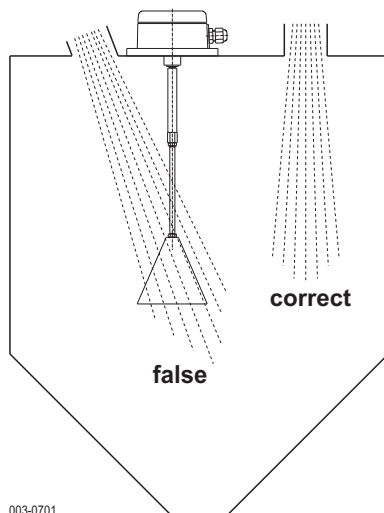


003-0200

2. Installation

2.1 Preparation

- Read and follow the safety instructions and the operating instructions before handling with the device!
- Inspect if the delivery is complete. Verify if you got:
 - + housing with anti-buckling protection
 - + rod with 2 screw nuts
 - + measuring cone
- The indicator has to be mounted in this way that the bulk good, being stored next to the pendulum, does not block the cone from moving besides.
- The pendulum has not to be struck by the filling stream.



2.2 Mounting of the cone

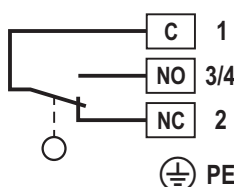
- Check if the counter nuts are screwed with the rod.
- Then screw the rod with the anti-buckling protection and afterwards screw the cone with the rod.
- Screw tight the both counter nuts.
- If the cone has to be mounted from the inside of the container, the housing has to be mounted at the connection flange first. Afterwards mount the rod and the cone as mentioned above.

2.3 Mounting

- Put the level indicator together with the sealing at the provided flange and screw it with screws M6 and the washers.

2.4 Electrical connection

Circuit diagram



2.5 Cable gland

- After electrical connection, the cable gland has to be screwed tightly.
- Screw the cap nut, until the cable entry is fixed and closed tightly.

3. Utilization

3.1 Putting into operation

- Commissioning of the pendulum level indicator only, if the installation in the container or silo will be done correctly and if it will be fixed tightly with the electrical connection.

3.2 Normal operation

- Use the pendulum level indicator in its intended application only.
- Comply with the details about maximum ambient temperatures, stated on the data plate.
- If the indicator will be damaged, take the device out of operation immediately.

3.3 Inexpert handling

- Ignoring of the safety instructions and the operating instructions.
- Utilization of the pendulum level indicator in not intended use.
- Mounting of spare parts which are no original parts.
- Violation against applicable law and standards.

4. Maintenance and servicing

4.1 Maintenance

- In case of intended use, the pendulum level indicator needs no maintenance.

4.2 Servicing

- Damaged parts, connections or cable glands have to be repaired immediately or being replaced with parts of the same kind.
- Until the complete reconstruction of the proper function, the pendulum level indicator must not be used any more.

5. Storage

- Store the pendulum level indicator at a dry place.
- Dismount the rod together with the cone. Store the housing on its top with the anti-buckling protection upwards.

6. Disposal

- The level indicator can be recycled.
- The disposal applies to the valid environmental guidelines according to the location of the carrier and the local manufacturing conditions.

Pendulum level indicator

Level limit switch for bulk goods



Gas+
Dust



Explosion protection information

and supplement to the operating instructions

Type plate details B1

<p>Manufacturer and address</p> <p>talleres filsa, s.a.u. Bemat Mitge, 33 - E-08100 Mollet del Vallès - Tel. +34 93 570 46 01</p>		<p>CE sign with the number of the "Notified Body" which is involved in the production control phase</p> <p>CE 0044</p>		<p>Connection diagram</p> 	
<p>Model designation</p> <p>Typ MS1-B1-COALV1</p>		<p> II 1/2D Ex ta/tb IIIC T 80 °C</p>		<p>Details to loadability of the signal contact</p> <p>Contact 4 A 240 V~</p>	
<p>Container pressure (tested pressure)</p> <p>Δp -0,08 bar...+0,08 bar</p>		<p>-25 °C ≤ Ta ≤ +80 °C / -20 °C ≤ Ta ≤ +70 °C</p>		<p>Type of protection</p> <p>IP66 <input type="checkbox"/></p>	
<p>Month and year of delivery</p> <p>Unique serial number</p> <p>Number which the order was handled</p>		<p>Dust marking</p> <p>Ambient temperature (operation temperature)</p> <p>EC-type examination certificate number</p>			
<p>S# 1234567890</p> <p>A.- Nr. 1234567890</p>		<p>03/10</p>		<p>IBExU05ATEX1174</p>	


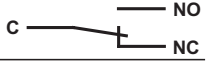

FILSA

Competence in explosion protection

Explosion protection information 04/14 © by FILSA MS1-EI-01-EN 01

Type plate details B5


 Gas+Dust  and **hybrid mixtures**

Manufacturer and address	talleres filsa, s.a.u.  0044		 Connection diagram
CE sign with the number of the "Notified Body" which is involved in the production control phase	Bernat Metge, 33 - E-08100 Mollet del Vallès - Tel. +34 93 570 46 01		
Model designation	Typ MS1-B5-COILV1	 II 1/2D Ex ta/tb IIIC T 80 °C II 2G Ex ib IIB T6	Contact $U_i \leq 30 \text{ V}$ $I_i \leq 0,1 \text{ A}$ Details of intrinsically safe supply of the signal contact.
Container pressure (tested pressure)	$\Delta p -0,08 \text{ bar} \dots +0,08 \text{ bar}$	$-25 \text{ °C} \leq T_a \leq +80 \text{ °C} / -20 \text{ °C} \leq T_a \leq +70 \text{ °C}$	
	S# 1234567890 A.-Nr. 1234567890 03/10	IBExU05ATEX1174	IP66 <input type="checkbox"/> Type of protection

Month and year of delivery	Gas and Dust Marking
Unique serial number	Ambient temperature (operation temperature)
Number which the order was handled	EC-type examination certificate number


Marking in accordance with ATEX 95 and DIN EN 60079-0:2009

Pendulum level indicator for use on the boundary from zone 20 to zone 21

 **II 1/2 D Ex ta/tb IIIC T80°C**

Equivalent to Directive 94/9/EG (ATEX 95)	_____
Equipment group II = everything except mining	_____
Equipment category category 1 for zone 20, 21 and 22 category 2 for zone 21 and 22	_____
/ = level indicators, which are installed on the boundary between different zones.	_____
Type of explosive atmosphere D = Dust	_____
the Ex symbol according to DIN EN 60079-0	_____
t = protection by enclosure	_____
a = device with „very high“protection standard for zone 20, 21 and 22	_____
b = device with „high“protection standard for zone 21 and 22	_____
IIIC for flammable conductive dust, flammable non-conductive dust and flammable fibres and flyings	_____
T.°C maximum surface temperature	_____

Pendulum level indicator for use in zone 1

 **II 2 G Ex ib IIB T6**

Equipment category 2 for zone 1 and 2	_____
Type of explosive atmosphere G = Gas	_____
i = protection by intrinsically safe	_____
b = device with „high“protection standard for zone 1 and 2	_____
IIB for all flammable gases except hydrogen, acetylene and carbon disulphide	_____
temperature class T6 = 85°C	_____

Order code **B1**

Marking: II 1D / 2D



Equipment category appropriation by zones




Pendulum level indicator for use on the boundary from zone 20 to zone 21

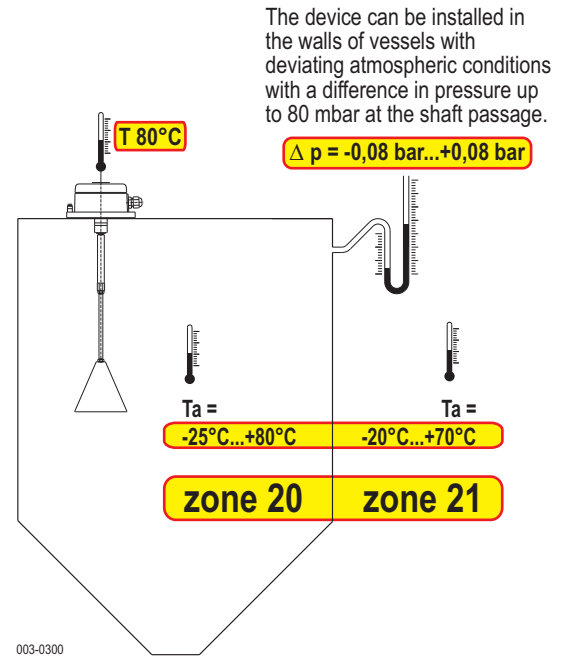
Ambient temperatures T_a

 The ambient temperature T_a defines the maximum operating temperature of the indicators. Inside the vessel this is process temperature (the air or the bulk goods temperature) nearby the device.

maximum surface temperature T

The maximum surface temperature means the hottest point at the equipment.

talleres filsa, s.a.u.  0044 <small>Bernat Metge, 33 - E-08100 Mollet del Vallès - Tel. +34 93 570 46 01</small>		 NO NC
Typ MS1 B1 COALV1	 II 1/2D Ex ta/tb III C T 80 °C	Contact 4 A 240 V~
Δp -0,08 bar...+0,08 bar	$-25\text{ °C} \leq T_a \leq +80\text{ °C} / -20\text{ °C} \leq T_a \leq +70\text{ °C}$	
S# 1234567890 A.-Nr. 1234567890 03/10	IBExU05ATEX1174	IP66


 Order code **B5**

Marking: II 1D / 2D

II 2G



Equipment category appropriation by zones

Pendulum level indicator for use on the boundary from zone 20 to zone 21 and in zone 1





Ambient temperatures T_a

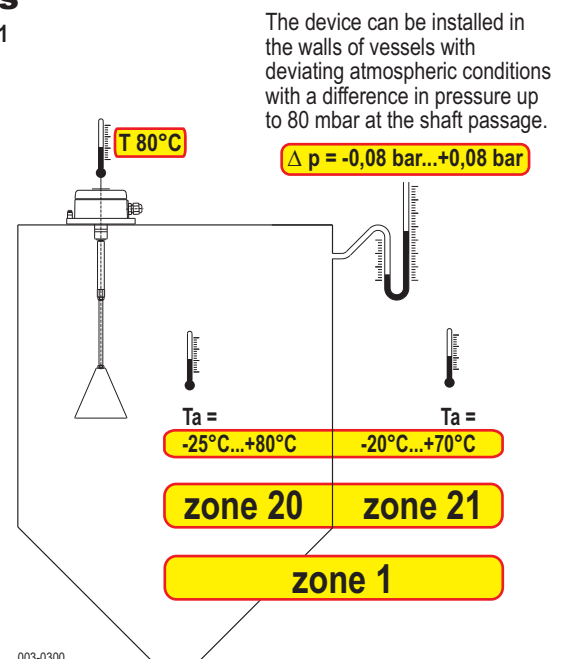
 The ambient temperature T_a defines the maximum operating temperature of the indicators. Inside the vessel this is process temperature (the air or the bulk goods temperature) nearby the device.

maximum surface temperature T

The maximum surface temperature means the hottest point at the equipment.

 The device matches with temperature class **T 6**.

talleres filsa, s.a.u.  0044 <small>Bernat Metge, 33 - E-08100 Mollet del Vallès - Tel. +34 93 570 46 01</small>		 NO NC
Typ MS1 B5 COILV1	 II 1/2D Ex ta/tb III C T 80 °C  II 2G Ex ib IIB T 6	Contact $U_i \leq 30\text{ V}$ $I_i \leq 0,1\text{ A}$
Δp -0,08 bar...+0,08 bar	$-25\text{ °C} \leq T_a \leq +80\text{ °C} / -20\text{ °C} \leq T_a \leq +70\text{ °C}$	
S# 1234567890 A.-Nr. 1234567890 03/10	IBExU05ATEX1174	IP66





Special conditions and instructions for safe application

- 1.1 The installation, maintenance, initial operation, removal and repair have to be controlled resp. checked by an “authorized person” for explosion protection.
- 1.2 For the electrical connection you have to take notice of the local and statutory requirements and/or the VDE 0100.
- 1.3 Take notice of the specifications on the data plate.
- 1.4 Using the device in ambient temperatures > +60 °C, the applied connection cables have to be made for temperatures of min. +80 °C.
- 1.5 As soon as the device will be brought into the explosion hazardous area it has to be mounted immediately at the pre-caused place and a cable has to be brought into the cable gland.
- 1.6 The cable gland were screwed and protected at the factory. Please check if the cable gland have loosened during on the mounting or at the transport. When it is loosened, it has to be fitted again.
- 1.7 To secure the type of protection, the screw nut of the cable gland has to be fixed at the installation with a torsional force of min. 5.0 Nm. **ATTENTION** If it will be fastened too strong, the IP-protection can be affected.
- 1.8 The earth connection of the device has to be installed in such a way that mechanical damage will be excluded.
- 1.9 Using the level indicator in the silo wall under deviating atmospheric conditions, the maximum difference in pressure at the shaft passage must not exceed 80 mbar and the working temperature at the shaft passage has not to exceed +80 °C.
- 1.10 The device may put into operation with built-in cap-sealing and when it is closed, only.
- 1.11 Switch off the power supply, before opening the device. (touchdangerous voltage)
- 1.12 Tear-off danger! Don't pour on the measuring cone. In case of full indication the filling process has to be stopped immediately.
- 1.13 The cone has to be in stainless steel, in case of existing combustible dusts with a minimum ignition energy less than 3 mJ or with a minimum ignition temperature under +300 °C (BAM assessment).
- 1.14 Take notice of the requirements of DIN EN 61241-14 and DIN EN 60079-17 especially regarding the dust deposits and temperatures and follow the pertinent rules and regulations.

For the version B1



- 2.1 A fuse (with max. 4A) has to be connected in series to the voltage supply.
- 2.2 Protect the signal contact from voltage peaks when inductive loads are connected.

For the version B5



- 3.1 **Attention!**
For load limitation a certified barrier or a certified isolation amplifier with an intrinsically safe circuit at least for the category “ib” has to be connected in series, which is certified for gases of explosion group IIB.
- 3.2 Take additional notice of the requirements of EN 1127-1, especially regarding the temperatures and follow the pertinent rules and regulations.
- 3.3 The device with an intrinsically safe electric circuit can be used in dusty explosive hazardous areas.
- 3.4 **Hybrid Mixtures**
The level indicator is approved for the use in hybrid mixtures.