

membrane level indicator for solids

A-100, AD, CD, CD2M, PD

Operating Instructions

Index	Page
Safety instructions	02
Operating instructions	
1. Specification	03
1.1 Intended use	
1.2 Function	
1.3 Technical data	
1.4 Materials	04
1.5 Dimensions	
2. Installation	04
2.1 Preparing for use	
2.2 Mechanical connection	
2.3 Electrical connection	
3. Use	05
3.1 Commissioning	
3.2 Normal operation	
3.3 Inexpert handling	
4. Maintenance, servicing and spare parts	05
4.1 Maintenance	
4.2 Servicing	
4.3 Spare parts	
5. Storage	05
6. Disposal	05

► **Read these Safety instructions before using the device for the first time and follow the Operating instructions.**

Safety instructions

1. The installation, initial operation and maintenance should only be carried out by a qualified expert with electrical know-how.
2. Comply with the local and statutory rules and/or the VDE0100.
3. Before electrical connection, check the specifications on the data plate and the technical data of this manual.
4. A fuse must be connected in series to the supply voltage, according to the Standard and Normative documents.
5. Protect the signal contacts of the limit switch against voltage peaks when inductive or capacitive loads are connected.
6. The device may be put into operation only if the electrical connection is correct. To secure the type of protection, the sealing cap and the gasket must be placed correctly and the screw nut of the cable gland has to be fixed and fastened to the cable entry.
7. The earth connection of the device has to be installed in such a way that mechanical damage will be excluded.
8. Depending on the characteristics of bulk solids, define regular intervals of time to inspect the device and the membrane to detect damage or abrasion to the membrane. If there is damage to the membrane it is necessary change it to ensure the Type of protection.
9. Protect the device and the membrane from pointed objects.
10. Clean the device with a damp towel. Do not use any pointed objects or any aggressive chemical products.
11. It is recommended to mount the devices vertically. With this position the product can flow to and from the membrane. The device can be mounted horizontally for example to control obstructions in conveyors or can be mounted in surfaces with a maximum 40 ° slope from the horizontal where the material can flow easily and leave the membrane without product.
12. The high level controllers should be mounted "low enough" for the material to reach and totally cover the membrane before the high level signal is necessary. The low level controllers should be mounted "high enough" for the material to leave the membrane free with sufficient anticipation to actuate to the control systems.
13. For a proper type of protection, the device should be installed respecting the position of the cable glands or, depending on the models, the labels with the orientations, for example in models with air filter.
14. Switch off the power supply, before disconnecting the device.

Operating instructions

1. Specification

1.1 Intended use

The membrane level indicator are to be used to control the maximum or minimum level of bulk solids in silos or vessels.

These controllers consist of a switch actuated by a membrane and it is recommended for dusty and powdery, granulated and grainy bulk goods like dust, flour, grain, sand, plastic, etc. with an easy flow and a bulk density from 0.3 to 2.5 t/m³.

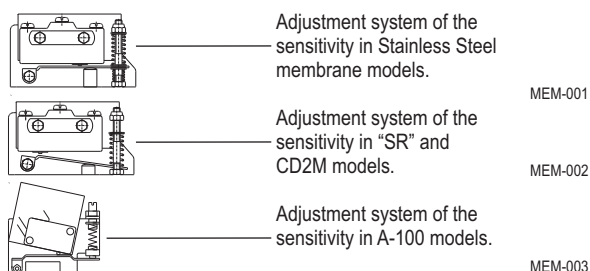
1.2 Function

The membrane must to be exposed to the material.

The movement of the switch is the result of the pressure exerted by the incoming bulk material against the membrane which forces the membrane to move backwards, reversing the position of the switch and the signal is used for example to control the transport system in the silo.

The models "A-100", "AD", "SR" y "CD2M" and the models with S.S. membrane have a regulation system by a spring that allows the adjustment of the sensitivity. Tightening the regulation nut to reduce the sensitivity and increase the strain of the material to activate the microswitch. Clockwise insensitive.

The models are adjusted at their maximum sensitivity. It is necessary to ensure the proper pressure to the membrane that returns the membrane when there is no product covering it.



1.3 Technical data

Manufacturer	Talleres Filsa, S.A.U.	
Address	Bernat Metge, 33 08100 Mollet del Vallès (Barcelona -Spain)	
Name	Membrane level indicator	
Type	A-100	ref: 2210-...
	AD	ref: 2212-...
	CD	ref: 2201-...
	CD2M	ref: 2204-...
	PD	ref: 2205-...
Density of the product	0.3 t/m ³ ... 2.5 t/m ³	
Ambient pressure	Atmospheric	
Maximum pressure	+0.5 bar	
Cable entry		
A-100	Ø 9 mm, cable gland M12x1.5 depending on the model	
AD, CD, CD2M, PD	M20x1.5	

Maximum voltage	250 V AC
Contact function	1 NO + 1 NC
Capacity of the contact	
A-100	16 A / 250 V AC
AD, CD, CD2M, PD	15 A / 250 V AC
models "S" and "ES"	5 A / 250 V AC (for resistive loads)
For inductive or capacitive loads reduce at 50%	
Ambient temperature	
A-100	-10 °C ... +60 °C
AD	-20 °C ... +80 °C
CD, PD	-20 °C ... +60 °C
CD, PD with Aluminium housing	-25 °C ... +80 °C
CD2M	-20 °C ... +70 °C
Temperature of product	
AD with membrane of Viton	-20 °C ... +150 °C
AD with S.S. membrane	-20 °C ... +200 °C
Protection	According DIN EN60529
A-100	IP44
AD, CD, PD and	
CD, PD with Aluminium housing and	
AD, CD, PD with S.S. membrane and	
CD, PD S.S. and Alum. housing	IP53 / IP40 depending on the position of the cable gland
CD2M	IP65
Weight	
A-100	0.2 kg
AD	1.85 kg
CD	0.48 kg
CD with Aluminium housing	0.95 kg
PD	0.49 kg
PD with Aluminium housing	1 kg
CD2M	0.73 kg
Sensitivity	
A-100	20 ... 60 g adjustable
AD	100 ... 200 g adjustable
AD Vitón	100 ... 200 g adjustable
AD with S.S. membrane	200 ... 500 g adjustable
CD, PD	60 ... 1.000 g
CD, PD Vitón	60 ... 1.000 g
CD, PD with S.S. membrane	150 ... 2.000 g adjustable
CD 2M	60 ... 200 g adjustable

1.4 Materials

Housing

A-100	ABS
AD	Aluminium, EW 333I covered
CD, PD, CD2M	Glass reinforced Polyester
(Under request CD, PD with Aluminium housing)	

CD2M extra disk

PVC

Membrane

A-100	NBR
(Under request Viton)	
AD, CD, PD	NBR
(Under request Viton, Stainless Steel 1.4310)	
CD2M	2 membranes NBR
(Under request exterior membrane Viton)	

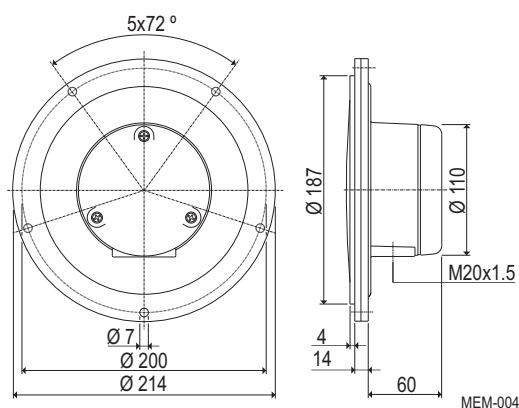
Mounting ring and screws

AD	Aluminium ring, EW 333I covered and screw of zincated Steel
(Under request Stainless Steel 1.4301)	
CD, PD, CD2M	Zincated Steel
(Under request Stainless Steel 1.4301)	

1.5 Dimensiones

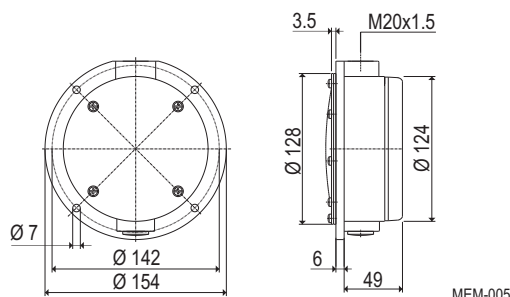
Approximate measures are given in mm.

AD



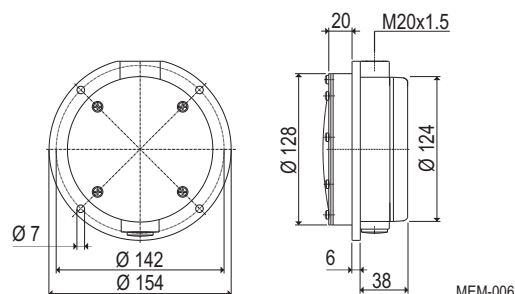
MEM-004

CD



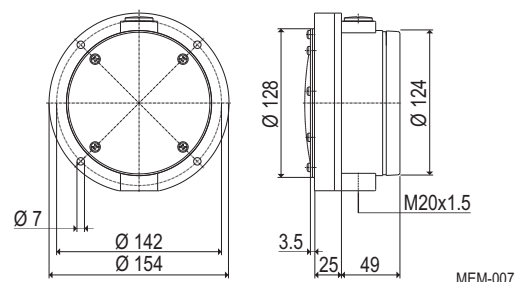
MEM-005

PD



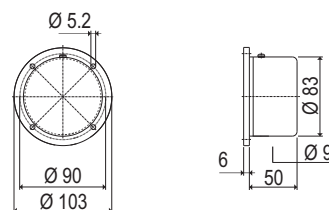
MEM-006

CD2M



MEM-007

A-100



MEM-008

2. Installation

2.1 Preparing for use

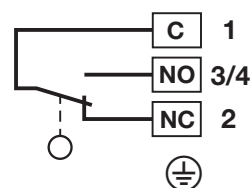
- Read the Safety instructions and the Operating instructions before using the controller.
- Verify and inspect the device and membrane to detect possible damage to the membrane during the transport or installation.

2.2 Mechanical connection

Drill holes in the silo or vessel and mount the indicator using screws, rods, fasteners or nuts making sure of the easy flow of the material and ensure that the product leaves the membrane without product on it.

2.3 Electrical connection

Connection diagram



MEM-009

Cable gland

- After electrical connection, tighten the cable gland.
- Screw the cap nut, until the cable entry is closed tightly to ensure the water-tightness.

3. Use**3.1 Commissioning**

- Put the level indicator into operation only, if the installation and the electrical connection have been done correctly.

3.2 Normal operation

- Use the device in its intended application only.
- Comply with the specifications on the data plate and the technical data of this manual.
- If the controller is damaged, disconnect it immediately.
- It is forbidden to make changes to the device. This violates the Normative.

3.3 Inexpert handling

- Ignoring the Safety instructions and the Operating instructions.
- Not intended use.
- Making changes or handling the controller.
- Violation against applicable Law and Standards.
- Using of non original parts.

4. Maintenance, servicing and spare parts**4.1 Maintenance**

- If used correctly, no specific maintenance is required.
- Depending on the characteristics of bulk solids, define regular intervals of time to inspect the device and the membrane to detect damage or abrasion to the membrane. If there is damage to the membrane it is necessary change it to ensure the Type of protection.

4.2 Servicing

- Be in mind that, with the passing of time, the values of the actuating pressure can be affected due to the temperature effect and/or due to the effect of a constant pressure.
- Check and review the state of the housing, the membrane and the correct commutation of the electric contact, as well.

4.3 Spare parts

- Use only original parts.
- The spare parts of the level indicator can be consulted in the document "R-MEM-01".

5. Storage

- Store the level indicator in a dry and dust-free environment.

6. Disposal

- Switch off the power supply, before disconnecting the device.
- 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.

FILSA constantly strives to improve its products and reserves the right to modify designs, materials and data without prior notice.

Keep this manual for further questions!

Declaración UE de Conformidad EU Declaration of Conformity

Controladores de nivel a membrana / Membrane level indicator

Versión / Version
AD, CD, CD-A, PD, PD-A

Talleres Filsa, S.A.U. declara bajo su exclusiva responsabilidad que los productos cumplen las directivas enumeradas. Esta declaración de conformidad sólo se aplica en conjunción con las instrucciones de uso e instrucciones de seguridad válidas de Talleres Filsa, S.A.U..

Talleres Filsa, S.A.U. hereby declares under its sole responsibility that the products comply with the listed directives. This declaration of conformity only applies in conjunction with the valid operating instructions and safety instructions of Talleres Filsa, S.A.U..

Directiva / Directive	Aplicado según las Normas armonizadas o documentos normativos / applied harmonized standards or normative documents
LVD 2014/35/EU	EN 61010-1:2010 + A1:2019 + A1:2019/AC:2019

Los aparatos con etiquetado  - también cumplen la siguiente directiva:
Devices with  - labelling also comply with the following directive:

Directiva / Directive	Normas armonizadas o documentos normativos aplicados en función de la variante / depending on variant applied harmonized standards or normative documents
ATEX 2014/34/EU	EN IEC 60079-0:2018/AC:2020-02 EN 60079-11:2012 EN 60079-31:2014

Certificado de examen UE de tipo número /
EU-Type Examination Certificate No.:

IBExU06ATEX1153
IBExU22ATEX1020X

Emitido por / Issued by:

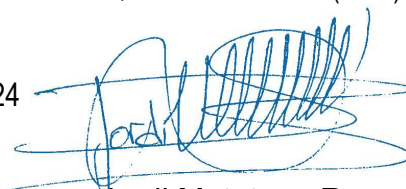
IBExU Institut für Sicherheitstechnik GmbH, 09599 Freiberg (0637)

Certificado de calidad mediante /
Quality assurance:

TÜV AUSTRIAGMBH, Deutschstraße 10, 1230 Wien / Austria (0408)

Talleres Filsa, S.A.U.
Calle Bernat Metge 33
08100 Mollet del Vallès
Barcelona, España

Mollet del Vallés, 01.08.2024


Jordi Matutano Ros
 QB

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.

Hasta que no se reciba el elemento en cuestión y se haya podido verificar por nuestros técnicos, no se debe entender aceptado el equipo como en garantía. En caso de encontrarse un deterioro o avería imputable a causas ajenas a nuestra empresa, se confirmará un presupuesto de reparación si fuese económicamente factible.

En ningún caso debe o puede llegar a entenderse que realizando la compra de otro equipo, éste puede llegar a ser excluyente de pagarse en caso de encontrarse un posible defecto de fabricación o imputable a una causa ajena a 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.

Until the device is received and it has been verified by our technicians, the equipment should not be accepted as under warranty. In the event of a deterioration or breakdown attributable to causes beyond our company, an offer of reparation will be confirmed if it is economically feasible.

In no case should or can it be understood that by purchasing other equipment, it can be excluded from being paid in the event of a possible manufacturing defect or attributable to a cause beyond 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.