



The solution for  
LEVEL MEASUREMENT  
TECHNOLOGY





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Use the online MBA product configurator to configure your individual level sensor:

<p><b>MBA888</b> DIGITAL ROTATING PADDLE PLUG-AND-PLAY</p>  <p><b>Application areas:</b></p> <ul style="list-style-type: none"> <li>• Measurement in all areas of application, regardless of bulk material properties</li> <li>• Loading systems</li> </ul> <p><b>Characteristics:</b></p> <ul style="list-style-type: none"> <li>• Maintenance- and wear-free thanks to a completely enclosed housing</li> <li>• Extra-strong</li> <li>• Compact and competitively priced</li> <li>• Explosion protection certified according to ATEX</li> <li>• Back-up monitoring in narrow pipes</li> </ul> <p>Go to product configurator</p>	<p><b>MBA800</b> DIGITAL ROTATING PADDLE</p>  <p><b>Application areas:</b></p> <ul style="list-style-type: none"> <li>• For all bulk materials</li> </ul> <p><b>Characteristics:</b></p> <ul style="list-style-type: none"> <li>• Wide range of models</li> <li>• Adjustable sensitivity</li> <li>• Optimized switching behaviour</li> </ul> <p>Go to product configurator</p>	<p><b>MBA801</b> DIGITAL SEMI ROTATING PADDLE HALFPIPE</p>  <p><b>Application areas:</b></p> <ul style="list-style-type: none"> <li>• For all bulk materials</li> </ul> <p><b>Characteristics:</b></p> <ul style="list-style-type: none"> <li>• Semi-rotating paddle</li> <li>• Extra-strong design</li> <li>• Adjustable torque</li> <li>• High system availability</li> <li>• Digital measuring technology</li> </ul> <p>Go to product configurator</p>
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<p><b>MBA100</b> MECHANICAL MEMBRANE LEVEL SWITCH</p>  <p><b>Application areas:</b></p> <ul style="list-style-type: none"> <li>• For all free-flowing bulk materials – granulates, pellets, grain</li> </ul> <p><b>Characteristics:</b></p> <ul style="list-style-type: none"> <li>• No power consumption in operation and no supply voltage</li> <li>• No calibration or adjustment required</li> <li>• Various flange dimensions and materials possible</li> <li>• Product-contacting parts made of stainless steel</li> </ul> <p>Go to product configurator</p>	<p><b>MBA700</b> LEVEL MEASUREMENT WITH VIBRATING PADDLE</p>  <p><b>Application areas:</b></p> <ul style="list-style-type: none"> <li>• For all bulk materials</li> </ul> <p><b>Characteristics:</b></p> <ul style="list-style-type: none"> <li>• No pinching of bulk material</li> <li>• No deposits</li> <li>• Installation possible vertically, horizontally diagonally</li> </ul> <p>Go to product configurator</p>
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<http://konfigurator.mba-instruments.de>

## MBA INSTRUMENTS

Level measurement systems for the process industry.

We develop, produce and sell level measurement systems. Whether you are looking for proven rotating paddle devices or decide in favour of membrane switches or vibrating paddles, we will find the best solution for your measuring task together with you. With the electronic MBA800 digital rotating paddle, we have also developed a maintenance-free device for universal use and set a new milestone in level measurement.



We serve our customers worldwide from all industrial sectors.



Our consistently high quality, professional advice and the materials used lead to the high acceptance of the company and are the basis for our long-standing customer relationships.

Exceptional equipment quality for demanding applications.

The MBA product range consists of selected measuring principles, all of which have the highest possible application flexibility. It is important to expand the range of applications of individual measurement methods. Optimisation of the application know-how are the

keywords here:

- + Individually adjustable
- + Durable device construction
- + Universally useable
- + Safe to handle

Products and customised solutions.

Whether it is the MBA100 membrane switches or MBA800 rotating paddle for point level measurements, or whether the patented MBA700 vibrating paddles are recommended, the variety of applications is almost inexhaustible.

Advice on the application and configuration of the measuring devices. is our priority because we want our customers to be satisfied – with us and our devices.





The digital rotating paddle, point level switches for bulk material

**MBA800**



- + Digital measurement technology
- + Proven design
- + Adjustable switching behaviour
- + ATEX certification / IECEx
- + High process reliability



Rotation by 360° with reversal of direction of rotation



Device head can swivel and be pulled off



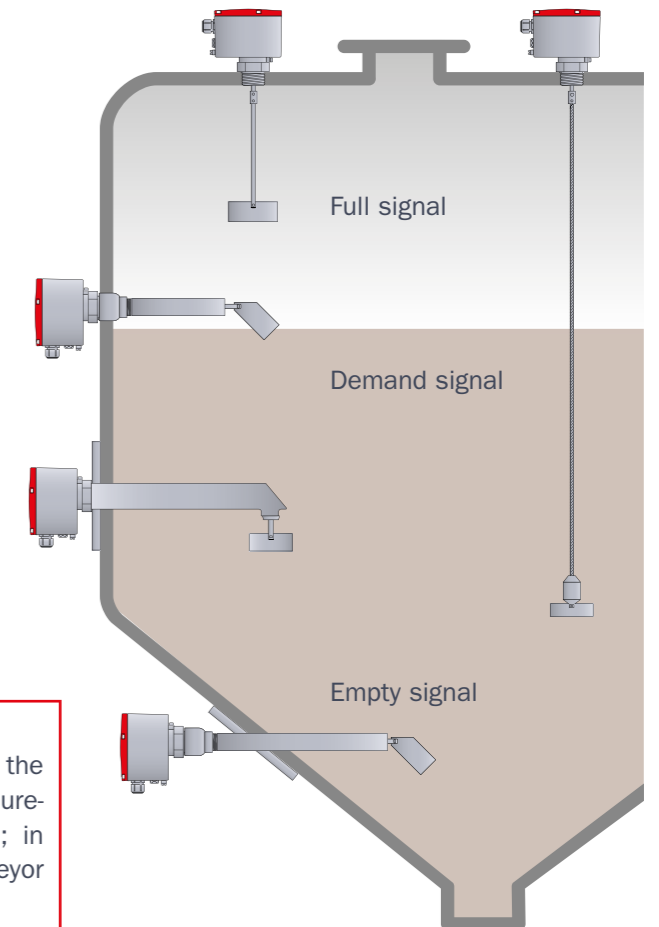
Selectable parameter sets

The maintenance-free MBA800 from the rotating paddle sensor series.

The successful combination of rotating paddle and stepper motor finds its application in the MBA800 digital level device series. Its encapsulated housing prevents the penetration of bulk material into the rotating paddle, which means mechanical wear is excluded. The result is the world's first maintenance-free measuring device that can be used in almost any type of bulk material. The high level of user-friendliness is also ensured by factory-preset electronic torque.

The powerful motor with a miniature paddle can be set with regard to the torque, rotational speed, change of direction of rotation, reaction time and restart time. The torque (sensitivity) can also be adjusted separately in ten levels. The complete MBA800 series of devices is ATEX type-tested and can, therefore, be used in all bulk materials and applications. This also applies to strong vibrations with certified 29g.

**They can be used for almost all bulk material:** as a high sensor, empty sensor or demand sensor in the silo; as a back-up sensor in the downpipe; for measurement above discharge augers or similar conveyors; in transfer stations; below the discharge edge of conveyor belts and many other applications.



**TECHNICAL DESCRIPTION OF THE VARIANTS**

**Operating conditions**

Ambient temperature:	-50 ... +60 °C (without ATEX)	-20 ... +50 °C (with ATEX)
Temperature in the bin:	up to 1200 °C	
Pressure in the bin:	-0.5 ... +10 bar (air pressure based on the ambient pressure)	
Vibration resistance:	tested up to 29 g	
Housing protection class:	IP65 – water and dustproof for outdoor installation	

**Product characteristics**

	MBA810	MBA820
Supply voltage:	115 V ... 230 V AC	24 V DC (±5%)
Current consumption:	26 mA (6 VA)	250 mA (6 W)
Signal generator:	Relay changer-over contacts, potential-free	Optocoupler as normally open contact (NC)
Signal output:	loadable up to max.: 230 V 6 A	loadable up to max.: 30 V DC 1.2 A.
Torque:	Adjustable in 10 levels	
Housing:	Aluminium GD-ALSI12 / 3.2582.05 / non-ferrous and therefore salt-water-proof	
Product-contacting parts:	Steel or stainless steel 1.4305 / other materials possible on request	
Seals:	VITON and PTFE / other materials possible on request	

**Connection types**

Flange:	DN100 / PN6 und PN16; DN125 / PN6 and PN16 / threaded connector G 1 1/2"
Immersion depths:	90 mm to max. 15 m





The digital semi-rotating paddle  
Point level switches for bulk material

### MBA801 halfpipe



- + Digital measurement technology
- + Extremely robust construction
- + Adjustable torque
- + ATEX certification / IECEx
- + High process reliability



Swivelling range of 120°



Paddle and shaft welded



Robust, integrated protective cover

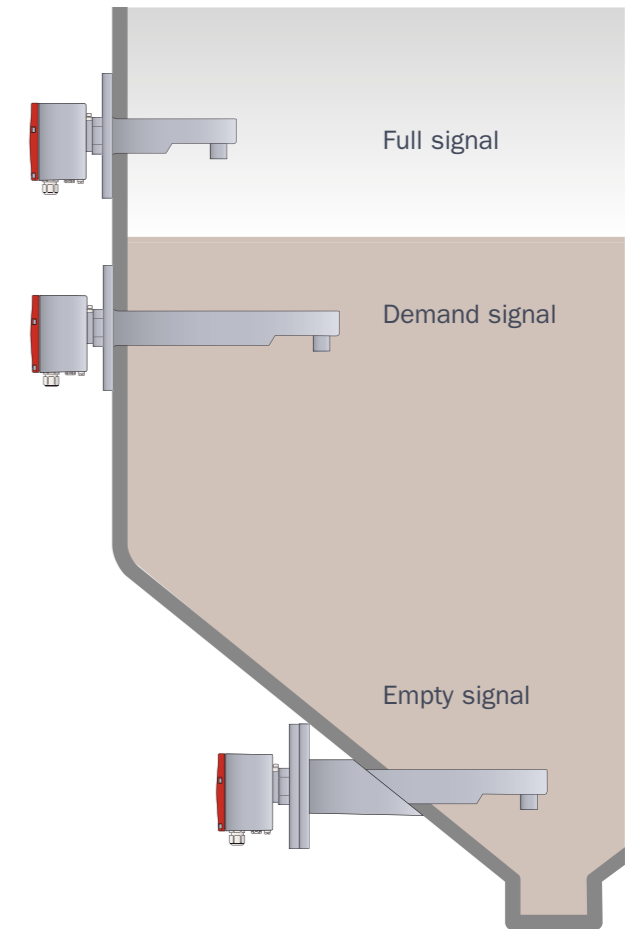
The robust MBA801 halfpipe complements the rotating paddle sensor series.

The new and digital semi-rotating paddle – the MBA801 halfpipe – measures directly in the falling bulk flow. The extra-strong shaft (12 mm shaft diameter) is mounted on a firmly welded paddle under a protective cover thereby making it perfectly protected against heavy or abrasive bulk material.

The paddle swings below the protective cover by 120 degrees. The swinging prevents material from becoming wrapped around the shaft or the paddle jamming and displaying incorrect messages. An electronic signal is emitted if the bulk material rises up in the silo and blocks the swinging paddle.

The halfpipe is put at positions where a fill-level measurement has not been possible until now. The double sealing system protects the electronics against dust and moisture getting in, and with the ATEX certification, the level sensors are well equipped for zones prone to a dust explosion.

**They can be used for almost all bulk material:**  
as a high sensor, empty sensor or demand sensor in the silo; as a back-up sensor in the downpipe; for measurement above discharge augers or similar conveyors; in transfer stations; below the discharge edge of conveyor belts and many other applications.



#### TECHNICAL DESCRIPTION OF THE VARIANTS

##### Operating conditions

Ambient temperature:	-50 ... +60 °C (without ATEX)	-20 ... +50 °C (with ATEX)
Temperature in the bin:	up to 1200 °C	
Pressure in the bin:	-0.5 ... +10 bar (air pressure based on the ambient pressure)	
Vibration resistance:	tested up to 29 g	
Housing protection class:	IP65 – water and dustproof for outdoor installation	

##### Product characteristics

	MBA811	MBA821
Supply voltage:	115 V ... 230 V AC	24 V DC (±5 %)
Current consumption:	26 mA (6 VA)	250 mA (6 W)
Signal generator:	Relay changer-over contacts, potential-free	Optocoupler as normally open contact (NC)
Signal output:	loadable up to max.: 230 V 6 A	loadable up to max.: 30 V DC 1.2 A
Torque:	Adjustable in 10 levels	
Housing:	Aluminium GD-ALSI12 / 3.2582.05 / non-ferrous and therefore salt-water-proof	
Product-contacting parts:	Steel or stainless steel 1.4305 / other materials possible on request	
Seals:	VITON and PTFE / other materials possible on request	

##### Connection types

Flange:	DN100 / PN6 und PN16; DN125 / PN6 and PN16 / threaded connector G 1 1/2 "
Immersion depths:	Up to max. 650 mm, other immersion depths possible on request



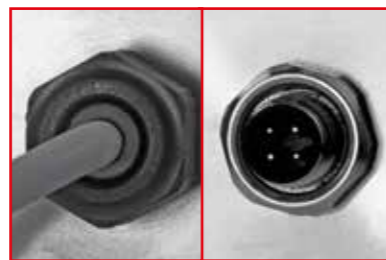
The digital rotating paddle,  
Point level switches for bulk material

**MBA888**

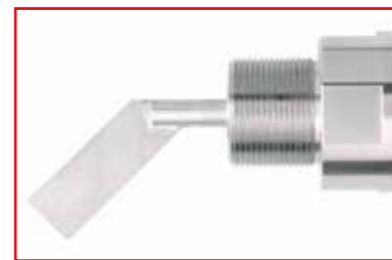
- + Digital measurement technology
- + Compact design
- + Can be used universally
- + ATEX certification / IECEx
- + High process reliability



Maintenance-free due to the completely closed design.



Two versions for connection with cable or M12 plug



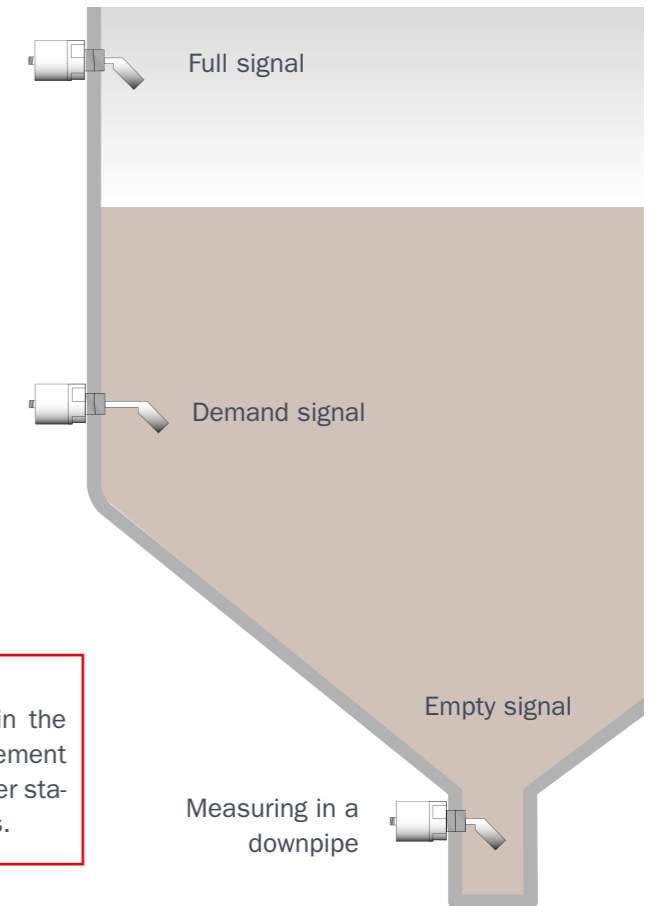
Welded and robust paddle provides high system availability

**MBA888: Maintenance-free level measurement with stepper motor**

The plug-and-play version of the digital measuring device series is equipped with a stepper motor. The preset parameter set ensures extremely easy handling and optimum performance in almost all types of bulk material – independently of properties such as adhesive force, flow properties or bulk material density.

The housing of the device is completely sealed so that dust or moisture cannot penetrate. The unit's construction is wear-free, enables maintenance-free operation and is not sensitive to shocks and vibrations. The device can be connected either with an M12 plug or a connection cable.

**They can be used for almost all bulk material:** as a full sensor, empty sensor or demand sensor in the silo; as a back-up sensor in the downpipe; for measurement above discharge augers or similar conveyors; in transfer stations; even in downpipes and many other applications.



**TECHNICAL DESCRIPTION OF THE VARIANTS**

**Operating conditions**

Ambient temperature:	-50 ... +60 °C
Temperature in the bin:	up to 80 °C
Pressure in the bin:	-0.5 ... +10 bar (air pressure based on the ambient pressure)
Vibration resistance:	tested up to 29 g
Housing protection class:	IP65 – water and dustproof for outdoor installation

**Product characteristics**

Supply voltage:	115 V ... 230V AC	24 V DC (±5 %)
Current consumption:	26 mA (6 VA)	90 mA without output load
Signal generator:	Relay change-over contacts, potential-free	Optocoupler full or empty signal
Signal output:	loadable up to max.: 230 V 6 A	loadable up to max.: 24 V DC 1.2 A
Housing:	Aluminium or stainless steel	
Product-contacting parts:	Stainless steel 1.4305	
Seals:	VITON and PTFE	
Switching behaviour:	with change of direction of rotation, switching time 6 s without change of direction of rotation, switching time 1 s	
Electrical connectors:	M12 connector, A-coded only for 24 V version or 10-metre cable with open stranded wires	

**Connection types**

Connection:	Thread G 1 1/2"
Immersion depths:	120 mm/180 mm/250 mm



The fill-level detector for almost all bulk material and sediments

**MBA700**



- + Safe level measurement
- + Vibrating paddle
- + Sensitivity adjustable in three levels
- + No jamming from bulk material
- + Robust and resilient design



Vibrating paddle measures even very light bulk materials



Sensitivity of the vibrating paddle can be set in three levels



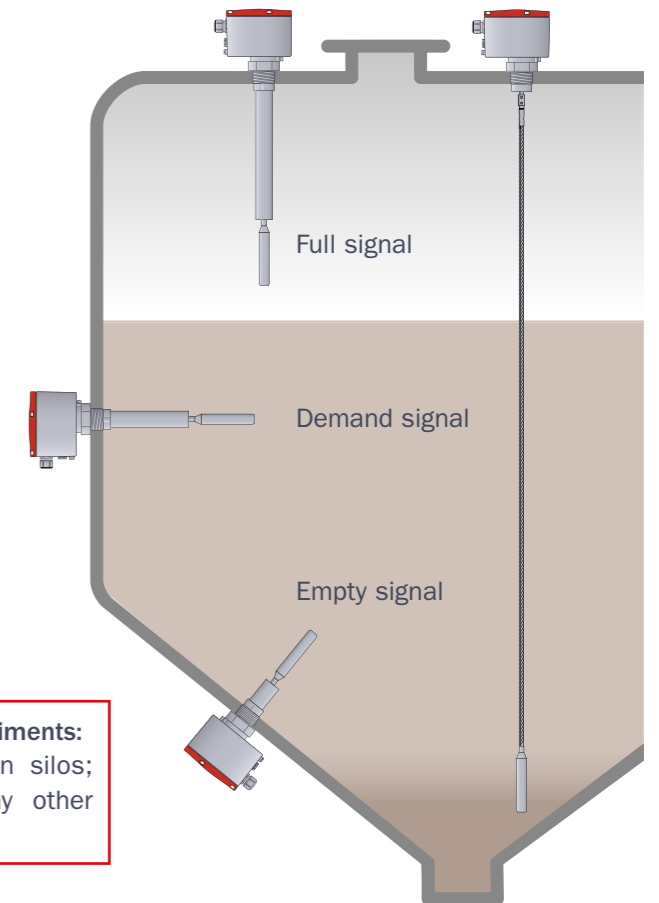
With bellows in a filling station for powdery, hazardous goods

**Safe level measurement with the MBA700 vibrating paddle**

The MBA700 vibrating paddle has a highly sensitive sensor inside its robust housing. This shows its strength, especially when measuring very light and powdery bulk materials (10 g/l). With this single-rod design, jamming and depositing of bulk material is excluded, which prevents error messages. The patented MBA700 vibrating paddle gives users three individually-selectable sensitivity levels making it very well suited for light as well as medium and heavy bulk material.

The MBA700 reliably carries out difficult measurement tasks, such as the measurement of sediment in liquids, for example. The vibrating paddle prevails due to its energy efficiency: It vibrates at 290 Hz and therefore does not consume much energy. The low vibration frequency also prevents it from independently "shovelling itself free", thereby providing a reliable measurement.

**They can be used for almost all bulk material and sediments:** as full sensor, empty sensor or demand sensor in silos; in filling systems; in transfer stations and many other applications.



**TECHNICAL DESCRIPTION**

Operating conditions:	Electronics housing	Probe
Max. temperature:	-40 ... +60 °C	-20 ... +150 °C
Max. pressure:	Ambient pressure	up to 10 bar
Protection class:	IP65	IP68
Material:	Aluminium GD-ALSI12 / 3.2582.05	Probe: Stainless steel 1.4301
	non-ferrous and, therefore, seawater-resistant	Protective tube: Stainless steel
Product characteristics:	MBA700 with relay contact	
Supply voltage:	20 ... 250 V AC/DC	
Signal output:	1x potential-free change-over contact	
	Max. load: AC 250 V 8 A	
	DC 24 V 8 A	
Power consumption:	< 3 VA	
Mech. Load limit:	100 N	
Switching speed full:	1 s	
Switching speed empty:	2 ... 5 s	
Approvals:	Dust Ex approval according to ATEX for zone 20/21: II 1/2D EX t IIIC T* Da/Db	
Immersion depths:	Standard length: 125 mm or 190 mm, with pipe extension up to 2000 mm	
	with cable extension up to 20,000 mm	
Connection types:	Thread: R1 1/2" EN10226-1 1 1/2" NPT	
	Flange: DN80 PN6 DN100 PN6	

The mechanical membrane point level switch for bulk material

**MBA100**



- + Maintenance-free measurement
- + Flush mounting
- + Mechanical adjustment
- + ATEX certification / IECEx
- + High process reliability



Usable for temperatures up to 300 °C.



Robust, stainless steel membrane for sensitive measurement



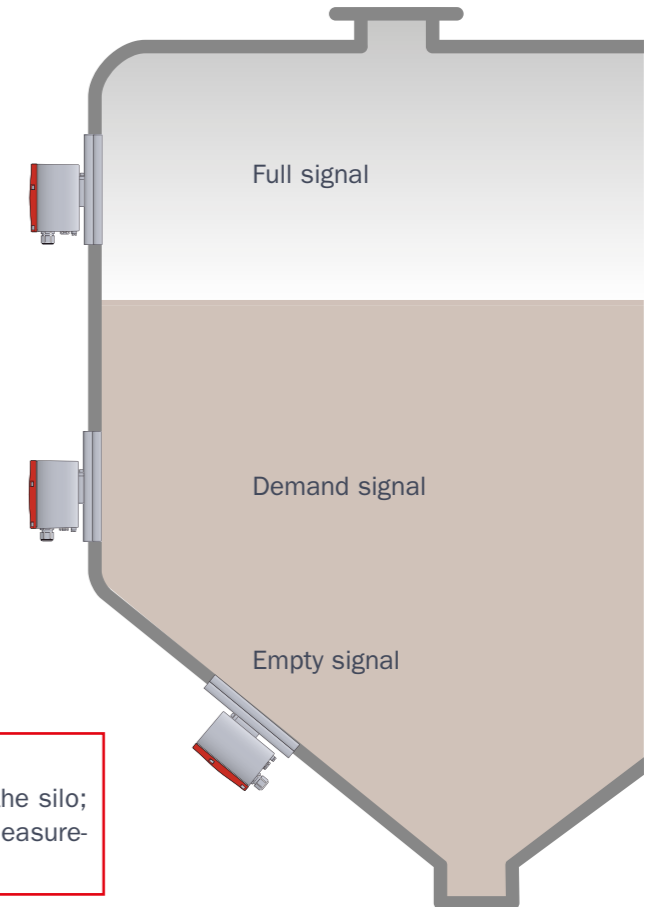
The measurement takes place without additional operating voltage

**MBA100: The maintenance-free membrane point level switch**

The MBA100 fulfils central tasks in the point level measurement of free-flowing bulk materials, granulates, powders or pellets. A switching operation is triggered by slight pressure of the bulk material on the stainless steel membrane. In the process, a microswitch is actuated that switches an electric signal.

Another variation of the device can withstand temperatures up to 300 °C due to the heat-resistant design.

The purely mechanical fill-level display is very easy to handle. Simply fastening it to the silo wall and connecting the signal line is enough to put the MBA100 into operation. No additional operating voltage is needed.



**They can be used for almost all bulk material:**  
as a full sensor, demand sensor or empty sensor in the silo;  
As a redundant measuring system for continuous measurements and many other applications.

**TECHNICAL DESCRIPTION OF THE VARIANTS**

<b>Operating conditions</b>			
Ambient temperature:	-40 ... +80 °C		
Temperature in the bin:	<b>MBA110</b>	<b>MBA120</b>	<b>MBA130</b>
	-20 ... +100 °C	-20 ... +200 °C	-20 ... 300 °C
Pressure:	Ambient pressure		
Protection class:	IP65 – water and dustproof for outdoor installation		
<b>Product characteristics</b>			
Supply voltage	Mechanical switch		
Signal generator:	Microswitch assignable as opener or closer		
Switching power	250 V, 10 A AC or 24 V 2 A DC		
Triggering pressure:	6 g/cm <sup>2</sup>		
<b>Material</b>			
Housing:	Aluminium: AlCuMgPb		
Product-contacting parts:	Membrane: Stainless steel 1.4310, Flange ring: 1.4301		
<b>Connection types</b>			
Flange:	189 mm, 6 bolt holes 7 mm diameter		



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