



## LEVEL MEASURING DEVICE

PRODUCT SERIES MEMBRANE SWITCH MBA 100

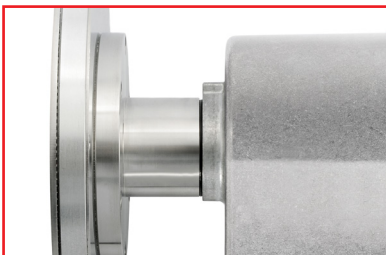


The mechanical  
membrane level detection switch for bulk material

**MBA100**



- + *maintenance-free measurement*
- + *flush-mounted installation*
- + *mechanical adjustment*
- + *ATEX certification/IECX*
- + *high system availability*



Usable for temperatures  
up to 300 °C.



Robust stainless steel membranes  
for sensitive measurement.



The measurement is carried out  
without additional operating voltage.

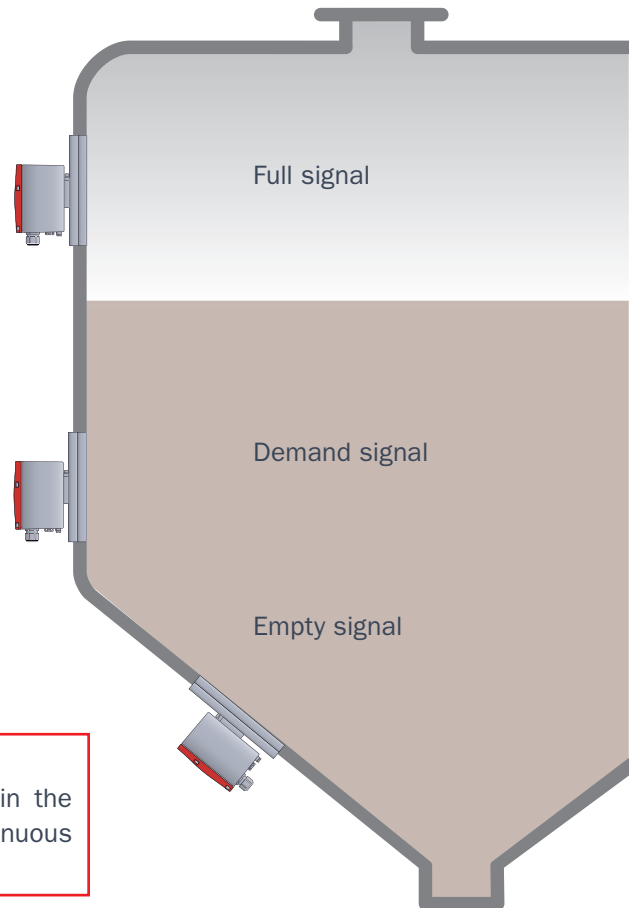


## MBA100: the maintenance-free membrane level detection switch

The MBA100 fulfils central tasks in level detection of free-flowing bulk material, granules, powder 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, which 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.



**Areas of application for almost any bulk materials:**  
as a full sensor, demand sensor or empty sensor in the silo; as a redundant measurement system for continuous measurements and many other applications.

### TECHNICAL DESCRIPTION OF THE VARIANTS

#### Operating Conditions

Ambient temperature: -40 .. +80°C

Temperature in the bin:	MBA110	MBA120	MBA130
	-20 .. +100°C	-20..+200°C	-20..300°C

Pressure: ambient pressure

Protection class: IP65 – water and dustproof for outdoor installation

#### Product properties

Supply voltage: Mechanical switch

Signal generator: Microswitch assignable as opener or closer

Switching power: 250V, 10A AC or 24V 2A DC

Triggering pressure: 6g/cm<sup>2</sup>

#### Material

Housing: Aluminium: AlCuMgPb

Components contact the product: Membrane:

Stainless steel 1.4305, Flange ring: 1.4301

#### Connection types

Flange: 189 mm, 6 bolt holes 7 mm diameter



PRODUCT INFORMATION

## MBA700

Vibration Paddle  
for Bulk Material



Tested and approved  
according the ATEX standards  
EN60079-0:2009,  
EN60079-31:2009

MADE IN GERMANY





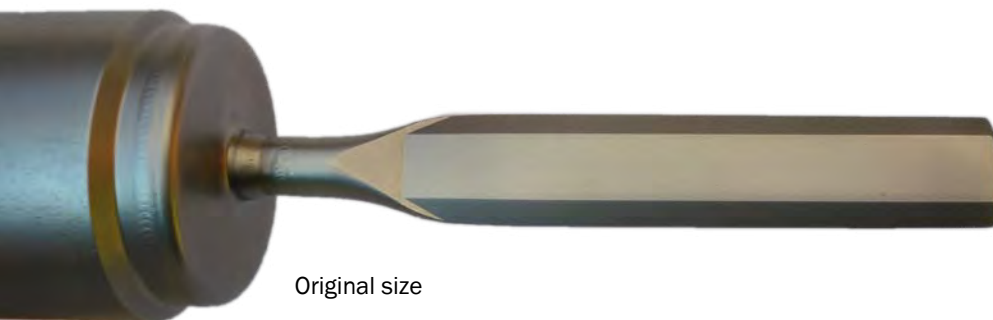
## Multiple improvements to measure the level of bulk materials: MBA 700 vibration paddle

**Robust**  
**Secure**  
**Reliable**  
**Energy-efficient**

– these are the parameters of the new MBA 700 vibration paddle. The MBA 700 vibration paddle, an original, patented, vibrating single rod, expands the range of bulk measurement devices of MBA Instruments GmbH.

The sword-shaped „single rod“ in the form of a paddle prevents the formation of deposits on the vibrating part. At 290 Hz, the modern vibration paddle MBA 700 vibrates with such low energy that it cannot „shovel itself free“ as may happen with other vibration rods and vibration forks. Incorrect measurements caused by cavitation are thus avoided. Furthermore, nothing can become wedged in gaps as is often the case with vibration forks in bulk material.

Relying on the vibration paddle method, the MBA 700 can virtually „feel“ the level of extremely light bulk material.



Original size



**A highly sensitive sensor packed in a robust housing:  
this is the concept of the new MBA 700**

# Application-specific installation of the MBA 700

Whether it be tea leaves or sand, wood, grain rasp or sugar: the MBA 700 can be used anywhere. Granulated or powdered bulk materials are typical materials that the MBA 700 can measure very well.

Its use is limited in the case of extremely sticky feed or bulk materials, since these are prone to strong caking. This is where our MBA 200 rotary paddle comes into use, for this measuring method can basically be used in any application.

## Sensitivity

The MBA 700 has 3 sensitivity settings:

- Setting A: for extremely light bulk material up to 10 g/l
- Setting B: for almost all bulk materials (default setting)
- Setting C: for heavy bulk materials

## Switching options

The MBA 700 has 2 alarm warning circuits:

### Full alarm:

The output goes into alarm state once the vibration paddle is covered by the bulk material.  
Fail-safe circuit: even in the case of a power failure, the output goes into the alarm state „full“.

### Empty alarm:

The output goes into alarm state as soon as the vibration paddle is no longer covered by the bulk material. Fail-safe circuit: even in the case of a power failure, the output goes into the alarm state „empty“.

Specifications	
Housing	Die-cast aluminium, 230D alloy (EN AC/44300) with high chemical resistance, IP 65 protection One cable gland M20x1.5 (optionally two cable glands)
Electronics	Multi voltage: 20 ... 250V AC/DC 3 VA, one floating changeover (250V, 5A AC / 24V DC, 5A)
	Power supply 20 ... 30V DC with 8/16mA output
Sensitivity	Approx. 20 kg/m <sup>3</sup> , special design up to 10 kg/m <sup>3</sup>
Switching speed	1 second, hysteresis 2 to 5 seconds
Product-contacting parts	Stainless steel 1.4301 / AISI 304
Ambient temperature	-40 ... +70 °C
Temperature in container	-40 ... + 80 °C / 150 °C
Pressure in container	Up to 10 bar

## Measuring method:

The MBA 700 vibration paddle is excited by a piezoelectric element to vibrate at its resonant frequency. When the bulk material touches the paddle, the vibration is damped and a binary signal is triggered. Once the vibration paddle is no longer surrounded by the bulk material, it starts to vibrate again and the signal reverses.

Different bulk materials dampen the vibrations to varying degrees. While in the case of sand it is sufficient if the tip of the paddle touches the material, extremely light materials require the paddle to be completely surrounded in order for a switch signal to be triggered.



## PROCESS MEASUREMENT

### GROUP

Due to years of experience in the field of automatization we offer together with the SMB group any kind of automatic systems like filling stations, palletizers, conveyors and compact storage systems. In combination with our level measuring technique it's possible to design and produce belt conveyors, turn tables and shiploading systems with telescopic belts tailored on customers request. And of course worldwide.



### COMPETENCE

We offer our customers our comprehensive know how obtained over decades in different applications. Our strength is to combine standards and special solutions to meet customer specifications and to find the best solution for a turn key project.



### WORLDWIDE

Where ever you are, our global network of representatives and subsidiaries is able to supply qualified support when you need it. We deliver the equipment for your measuring tasks, provide documentation and training. Fast and competent support, short delivery times and a high level of delivery reliability – that's MBA Instruments staff is known for.



### COMPANY

MBA Instruments GmbH continues in developing, production and distribution of measuring technique "Type MAIHAK" and develops new ideas. Customers are our most important partners. If our partner is satisfied only than he is able to be successful. And we are also successful with him. Satisfaction of our customers is our success.





## LEVEL MEASURING DEVICE

PRODUCT SERIES ROTATING PADDLE MBA800



The digital rotating paddle,  
level detection switch for bulk material

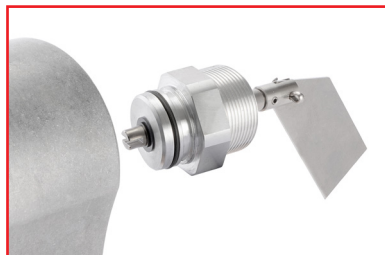
**MBA800**



- + *digital measurement technique*
- + *proven construction*
- + *adjustable switching behaviour*
- + *ATEX certification*
- + *high system availability*



Rotation by 360° with reversal of  
direction of rotation



Device head can swivel and be  
pulled off



Selectable parameter sets



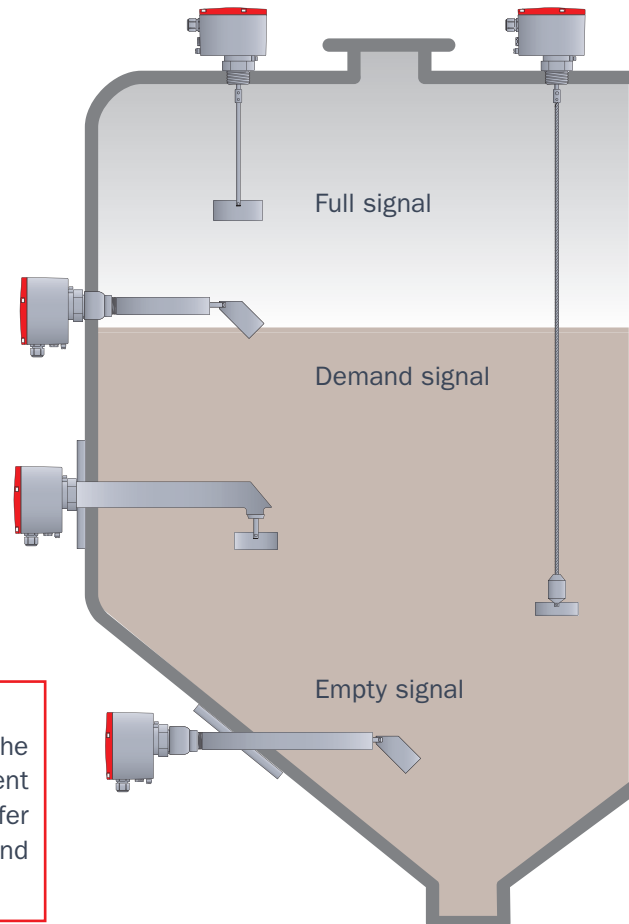
## The maintenance-free MBA800 from the rotating paddle detector series.

The successful combination of rotating paddle and stepper motor is used in the MBA800 digital fill level series of devices. Penetration of bulk material in the rotating paddle is prevented by its encapsulated housing, which means mechanical wear is excluded. The result is the world's first maintenance-free measurement device that can be used with almost any type of bulk material. In addition, the high level of user friendliness is given by the factory-set 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 steps. 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.

### Areas of application for almost any bulk materials:

as a full sensor, empty sensor or demand sensor in the silo; 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 in 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:	certified up to 28 g
Housing protection class:	IP65 – water and dustproof for outdoor installation

#### Product properties

	MBA810	MBA820
Supply voltage:	115 V...230 V AC / 24 V DC (±10%)	24 V DC (±10%) or 12V DC
Current consumption:	26mA (6VA) / 250mA (6W)	250mA (6W)
Signal generator:	Relay change-over contacts, potential-free contacts	Optical coupler as NO switch (NC)
Signal output:	loadable up to max.: 230V 6A	loadable up to max.: 30V DC 1,2A.
Torque:	Adjustable in 10 steps	
Housing:	Aluminium GD-ALSI12 / 3.2582.05 / non-ferrous and therefore salt-water-proof	
Contact to product:	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 and PN16; DN125 / PN6 and PN16 / threaded connector G 1 1/2"
Immersion depths:	90 mm to 15 m are possible with no problem





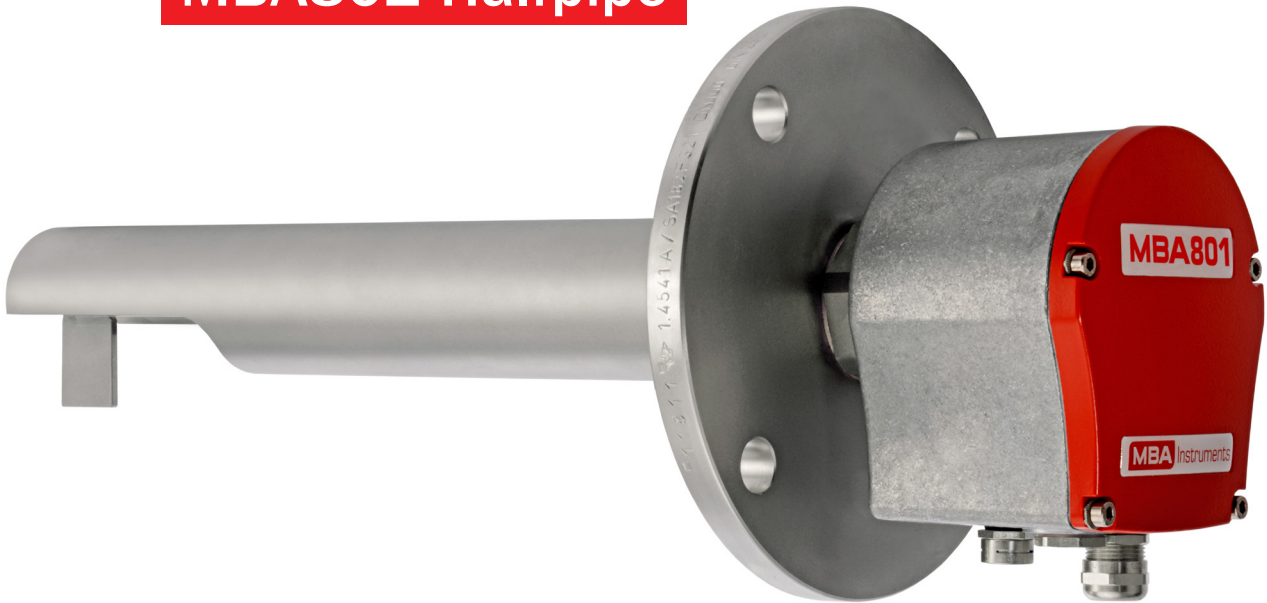
## LEVEL MEASURING DEVICE

SEMI ROTATING PADDLE PRODUCT SERIES MBA801



The digital semi rotating paddle,  
level detection switch for bulk material

### MBA801 Halfpipe



- + *digital measurement technology*
- + *extremely robust construction*
- + *adjustable torque*
- + *ATEX certification*
- + *high system availability*



Swivelling range of 120 degrees



Paddle and shaft welded



Robust, integrated protective cover



### The robust MBA801 Halfpipe supplements the rotating paddle detector series.

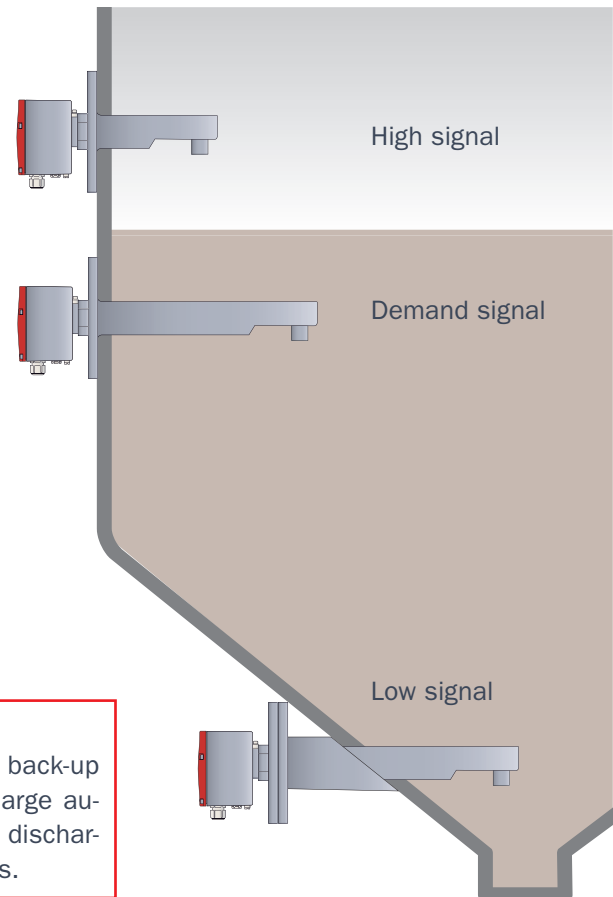
The new and digital semi rotating paddle – the MBA801 Halfpipe – measures directly in the falling flow of bulk material. The extra-strong shaft (12 mm shaft diameter) is mounted on a firmly welded paddle under a protective cover thereby making it perfectly protected against heavy or abrasive bulk material.

The paddle alternates below the protective cover by 120 degrees. The swiveling prevents material from becoming wrapped around the shaft or the paddle jamming and displaying incorrect messages. If the bulk material rises up in the silo and blocks the swinging paddle, then an electronic signal is emitted.

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 measuring devices are well equipped for zones prone to a dust explosion.

#### Areas of application for almost any bulk materials:

as a high sensor, empty sensor or low sensor in the silo; 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 in many other applications.



#### TECHNICAL DESCRIPTION OF THE VARIANTS

##### Operating Conditions

Ambient temperature:	-50 ... +60°C (without ATEX)	-20...+50°C (with ATEX)
Temperature in bin:	up to 1200°C	
Pressure in bin:	-0,5 ... +10bar (air pressure based on the ambient pressure)	
Resistance to vibration:	tested up to 28g	
Housing protection class:	IP65 – water and dustproof for outdoor installation	

##### Product properties

	MBA811	MBA821
Supply voltage:	115V...230V AC / 24 V DC (±10%)	24 V DC (±10%) or 12V DC
Current consumption:	26mA (6VA) / 250mA (6W)	250mA (6W)
Signal generator:	Relay change-over contacts, potential-free contacts	Optical coupler as NO switch (NC)
Signal output:	loadable up to max.: 230V 6A	loadable up to max.: 30V DC 1,2A
Torque:	Adjustable in 10 levels up to 184 mNm	
Housing:	Aluminium GD-ALSI12/3.2582.05/non-ferrous and therefore salt-water-proof	
Contact to product:	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 and PN16; DN125 / PN6 and PN16 / threaded connector G 1½"
Immersion depths:	Up to max. 650 mm, other immersion depths possible on request



## LEVEL MEASURING DEVICE

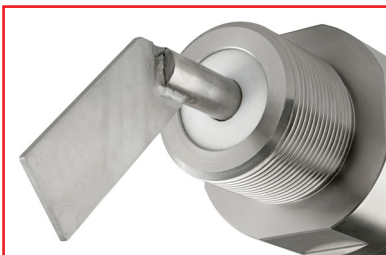
PRODUCT SERIES ROTATING PADDLE MBA888



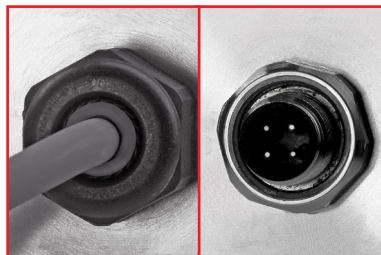
The digital rotating paddle,  
detection switch for bulk material

**MBA888**

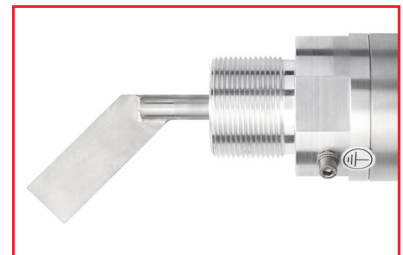
- + *Compact design*
- + *Universally applicable*
- + *ATEX certification*
- + *High system availability*
- + *Digital measurement technique*



Maintenance-free due to the completely closed design.



Two versions: connection with a cable or M12 connector.



Welded and robust paddles provide a high level of system availability.



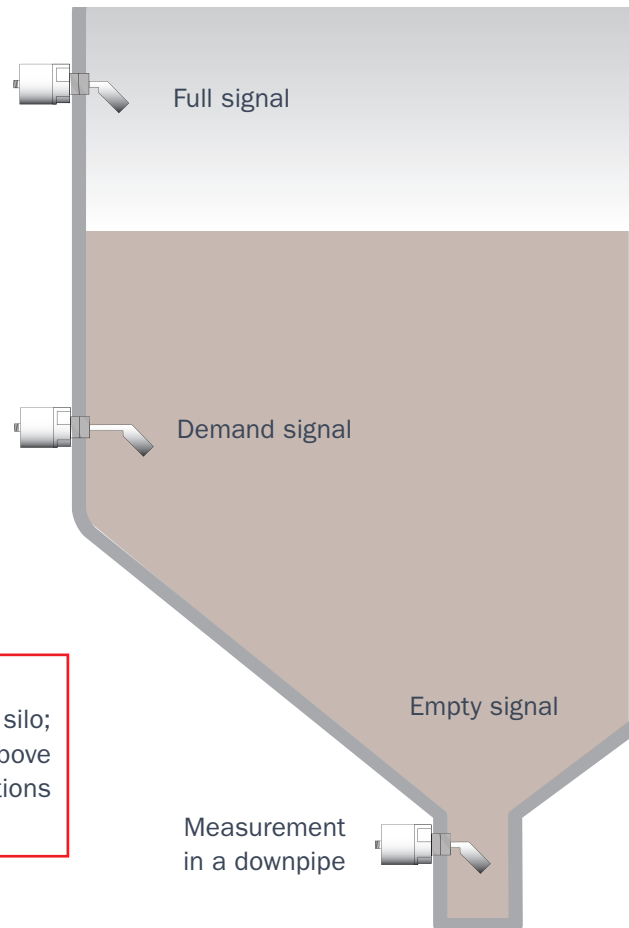
### MBA888: Maintenance-free fill-level measurement with a stepper motor

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 closed so that dust or moisture cannot get inside. The design of the device is wear-free, enables maintenance-free operation and is not sensitive to shaking and vibrations. The device can be connected either with an M12 connector or a connecting cable.

#### Areas of application for almost any bulk materials:

as a full sensor, empty sensor or demand sensor in the silo; back-up sensor in the downpipe; for measurement above discharge augers or similar conveyors; in transfer stations or even in downpipes and many other applications.



#### TECHNICAL DESCRIPTION OF THE VARIANTS

##### Operating Conditions

Ambient temperature:	-50 ... +60°C (without ATEX)	-20...+55°C (with ATEX)
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:	certified up to 29 g	
Housing protection class:	IP65 – water and dustproof for outdoor installation	

##### Product properties

Supply voltage:	115V...230V AC	24V DC (±10%)
Current consumption:	26mA (6VA)	90mA without output load
Signal generator:	Relay change-over: potential-free contacts	Optical coupler: full or empty signal
Signal output:	loadable up to max.: 230 V / 6 A	loadable up to max.: 24V DC 1,2A.
Housing:	Aluminium and stainless steel	
Components that contact product:	Stainless steel 1.4305	
Seals:	VITON and PTFE	
Switching behaviour:	with reversal of direction of rotation, switching time 6 sec. without reversal of direction of rotation, switching time 1 sec.	
Electrical connectors:	M12 connector, A-coded or 2 metre cable with open stranded wires	

##### Connection types

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

## MBA 2.2 and MBA 3.2

The rugged level indicators for bulk material with explosion proof certifications for **DUST and GAS**



### Explosion protection

In areas of explosion risks caused by dust and gas, only devices with Ex-certifications are permitted to install. The MBA level switches MBA2.2 and MBA 3.2 have a certification according to ATEX 94 for zone 20 (dust) **in combination** for zone 1 (gas). These instruments can be installed in that special kind of hazardous areas.

### Typical applications

Level measurement in silos and vessels with bulk material that can emit explosible gases and vapours with a typical risk to generate a hazardous explosive atmosphere. Examples: wood chips with glue or varnish, plastic chips, chemical products or sludge.

Level indicators from MBA Instruments have delivered an optimal performance in practice since the last 7 decades as full, demand and empty switches. Independent of silos size and bulk material – any time if high reliability is required, level switches from MBA Instruments are the no 1 choice.

The material of the electronic housing of MBA 2.2. and MBA 3.2 is heavy cast iron. With different types of shafts the instruments can be adapted to optimize customers application.

#### Dust-EX

Hazardous atmosphere due to explosive DUST:	zone	MBA 2.2 / MBA 3.2
Continuously, long-term or frequently	20	yes (inside the silo)
Occasionally	21	yes
Infrequently or for a short period	22	yes

#### Gas-Ex

Hazardous atmosphere due to GASES:	zone	MBA 2.2 / MBA 3.2
Continuously, long-term or frequently	0	no
Occasionally	1	yes
Infrequently or for a short period	2	yes





## MBA 2.2: vertical mounting

### ① Rigid shafts: High level switch

Rigid shafts are suitable for applications where the shaft is not affected by any side load. Short shafts can also be used for lateral, angled or horizontal mounting if the shaft could not be bent by the weight of the bulk material or its movement forces.

Immersion depth:

105, 20,150,160,200,250,300...1000 mm

### ② Flexible shafts:

#### High, demand or low level switch

The flexible shaft is a rugged steel cable with 8 or 12 mm diameter. The advantage: Movement of bulk material cannot affect or bend the shaft because the

flexible steel cord draws aside. If silo is empty the flexible shaft comes back to the normal position tightened by a weight.

Immersion depth:

300, 400, 500 ... 15 000 mm

### ③ Shafts with protection tube:

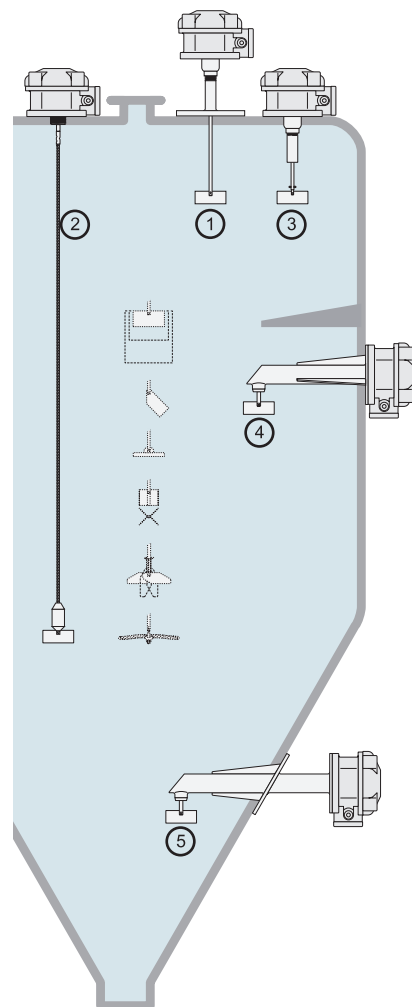
#### High, demand or low level switch

Shafts with protection tube are used for vertical mounting. The tube protects the shaft from lateral forces and impacts of bulk material. It also protects the shaft against pulling or friction forces of the bulk material while silo is being discharged.

Immersion depth:

300, 400, 500 ... 4000 mm

Technical Data	MBA 2.2	MBA 3.2
Installation	Vertical (see silo picture pos. 1, 2, 3)	Horizontal (see silo picture pos. 4, 5)
Electronic housing	Heavy cast iron, enclosure IP 65	
Signal	1 potential-free, change-over contact 1 change-over contact for motor power	
Temperature at the electronic	-15 to +60 °C optional heating: -30 to +60 °C	
Ex-certification	II 1/ 2 D IP65 T (dust-Ex Zone 20/21) II 2G EEx de IIC/IIB T1/T2/T3 (gas-Ex Zone 1)	
Power supply	230 V, 50 / 60 Hz, 115 V, 50 / 60 Hz 24 V, 50 / 60 Hz, 24 V DC	
Motor speed	1 RPM 5 RPM for applications where quick response is essential	
Process connection	flange DN 125 PN 6, normal steel flange DN 125 PN 6, stainless steel	flange DN100 PN6/PN10/PN16 flange DN 125 PN 6, normal steel flange DN 125 PN 6, stainl. steel angled flange 65°, DN 125 PN 6
Bearing / sealing	DT stainless steel bearing with shaft sealing ring DTR stainless steel bearing with shaft sealing ring + additional PTFE sealing DHY special ceramic bearing (for temperature up to 350 °C)	
Temperature in the vessel	up to 80 °C up to 200 °C	up to 80 °C up to 200 °C up to 350 °C
Pressure in the vessel	atmosphere according to ATEX directive	
Shaft type	standard solid shaft (pos. 1) flexible shaft (pos. 2) shaft with protection tube (pos 3)	angled shaft with reinforced ribs (pos. 4 and 5)
Paddle	paddle 98x40mm, paddle 98x98mm paddle 250x100, paddle einseitig schräge folded paddle 140x35mm, toggle paddle x-shape paddle 98x40mm, rope paddle	



## MBA 3.2: Horizontal mounting, even with 65° angled flange

### ④⑤ Shaft with reinforced angled shaft as demand or low level switch

The 90 ° angled shaft is been protected by a real rugged steel tube; a reinforced tube as an option. This rugged version can also be installed in flowing product stream or as a tailback indicator.

Immersion depth:

85, 250,350,450,650 mm





PRODUCT INFORMATION

## MBALOT 369

Continuous level measurement  
of bulk material



## **The MBALOT 369 continuously measures the level of all bulk material and sediments in liquids.**

The intelligent microprocessor electronics combined with the simple measuring principle makes the MBALOT 369 a rugged and reliable measuring system.

The MBALOT 369 is suitable for level measurement of fine and coarse grained solids as well as liquids.

The MBALOT 369 can be used in all bulk applications. Fine grained solids can be measured with the same reliability as coarse solids. Dust can not enter into the electronics due to the dust tight sealing. The lot cable is a stranded wire of stainless steel. The maximum measuring range is only depending on the cable length and can be 70 meters.

### **Principle**

To make measurement, a sensing weight is lowered on a stainless steel cable in the vessel until it hits the surface. Then the direction of the motor changes the direction and lifts up the sensing weight until it reaches the initial position. The intelligent motor control prevents the weight to wobble or hit against beams where it could get trapped. The level is calculated out of the unwound cable length. The value is available as soon as the weight reaches the surface.

The position and movement of the sensing weight is

indicated by a row of 10 LED's. A LCD display shows the height in meter or inch. As electronic signal the MBALOT 369 has a counter and a 4 ... 20 mA with a resolution up to  $\pm 1$  mm. All configuration can be done by the keypad on the electronics, supported by the LCD menu text.

A special hover function can be activated for faster measure cycles. With this function the sensing weight will stay in a parked position one meter over the product surface. From this position the next measurement will be much faster.

If a sensing weight gets trapped or covered by the product, an intelligent release routine will automatically start to gently rescue the weight without extensively pulling on the cable.




Application
■ continuous monitoring in storage bins, silos, tanks
■ universal usage for fine powders up to rough bulk material
■ mounting on very slim silos and narrow components possible
■ no re-adjusting if bulk material changes
■ reliable measurement in high dust applications
■ measurement is dependent of product specific $\mathcal{E}_R$ -value

Suitable for all bulk material, for example
Granulates, cleaning agent, wood chips, fly ash, polyester, foundry sand, salt, wood dust, gypsum, sewage sludge, powder, lime, talcum powder, pellets, charcoal, feed, ready mix foods, PVC, clay, detergent, coal, mud, barley, clinker property, coal dust, marble dust, spices, quartz powder, coffee, quartz sand, cocoa, grit, corn, stones, malt, ready-mix mortar, flour, cement, milk powder, raps, rice, rye, beans, soy beans, starch, wheat, sugar.

Product specification
■ simple measuring principle – therefore rugged and reliable
■ range up to 70 m
■ 4 ... 20 mA output with a accuracy up to 1 mm
■ flexible and non-corrosive stainless steel cable
■ intelligent rescue routine if sensing weight is trapped
■ LCD display for measurement and service and LEDs for trend
■ AC-current motor with smooth weight lift
■ weight only 18 kg
■ hover mode for faster measurement sequence
■ microprocessor controlled, special functions like: float mode, hover mode, reverse power, timer
■ dust tight housing: IP 65 / IP 66
■ product temperature up to 150 °C
■ pressure up to 2 bar
■ special sensing weights for different bulk materials
■ keys for device configuration



Sensing weights Different sensing weights adapted to the attributes of the bulk material			
	Application	Material sensing weight	Material gravity weight
Plastic weight	standard application (up to 60 °C)	PVC	PVC
Aluminium weight	for high temperatures (up to 150 °C)	Al	Al
Stainless steel weight	for high temperatures and corrosive materials (up to 150 °C)	1.4571	1.4571
Spider weight VA	powder and steep cones, high temperature (up to 100 °C)	1.4301	PVC
Spider weight PE	powder and steep cones (up to 60 °C)	PE	PVC
Bag weight	e.g. food (up to 80 °C)	linen	PVC
Perforated weight	for sediments in liquids (up to 100 °C)	1.4571	PVC

Technical data			
<b>Measuring range:</b>	<ul style="list-style-type: none"> <li>up to 70 m</li> </ul>	<b>Temperature:</b>	<ul style="list-style-type: none"> <li>process -40 °C ... +150 °C</li> <li>ambient -20 °C ... +60 °C</li> </ul>
<b>Output:</b>	<ul style="list-style-type: none"> <li>counter output (100 mm resolution)</li> <li>4 ... 20 mA (100 mm resolution)</li> <li>4 ... 20 mA (1 ... 5 mm resolution)</li> </ul>	<b>Sensing weight cable:</b>	<ul style="list-style-type: none"> <li>stranded wire, stainless steel (1.4401)</li> <li>Ø 1 mm</li> </ul>
<b>Relay:</b>	<ul style="list-style-type: none"> <li>2 potential free relays for: operating / fault signal counting pulses / reset counter</li> </ul>	<b>Mechanical connection:</b>	<ul style="list-style-type: none"> <li>flange: DN80 ... DN100 PN10</li> </ul>
<b>Display:</b>	<ul style="list-style-type: none"> <li>LCD display for measured values and configuration</li> <li>LED chain for movement and position of the sensing weight</li> </ul>	<b>CE-Conformity:</b>	<ul style="list-style-type: none"> <li>EMVG (89/336/EWG)</li> <li>NSR (72/23/EWG)</li> <li>ATEX (94/9/EG)</li> </ul>
<b>Configuration:</b>	<ul style="list-style-type: none"> <li>6 keys</li> <li>clear text menu</li> </ul>	<b>Dust explosion prove:</b>	<ul style="list-style-type: none"> <li>Ex zone 20 / 21</li> <li>BVS 03 ATEX E268</li> <li> II 1/2 D Ex tD A20/21 IP 65 T 100 °C</li> </ul>
<b>Dimensions:</b>	<ul style="list-style-type: none"> <li>395 x 356 x 316 mm (h x w x d)</li> </ul>	<b>Casing:</b>	<ul style="list-style-type: none"> <li>flange and basic casing aluminium, optional with DD-coating</li> <li>cover from plastic or aluminium (for Ex approval ATEX)</li> </ul>
<b>Weight:</b>	<ul style="list-style-type: none"> <li>18 kg</li> </ul>	<b>Accessories:</b>	<ul style="list-style-type: none"> <li>cable protection aluminium</li> <li>additional cover protection</li> <li>thermostatically controlled heating</li> <li>pneumatic connection</li> </ul>
<b>Initiation of Measurement Start:</b>	<ul style="list-style-type: none"> <li>manual, external</li> <li>integrated timer</li> </ul>		
<b>Power Supply:</b>	<ul style="list-style-type: none"> <li>230 V, 50/60 Hz</li> <li>42 V, 48 V, 115 V, 130 V, 250 V, 50/60 Hz</li> </ul>		
<b>Protection:</b>	<ul style="list-style-type: none"> <li>casing: IP 65</li> <li>cable chamber: IP 66</li> </ul>		
<b>Process pressure:</b>	<ul style="list-style-type: none"> <li>up to 2 bar (optional)</li> </ul>		





## MaihakLOT 369

### Zulassungen

- ☒ without Ex certification
- ☒ housing with extra DD-coating for aggressive medium
- ☒ process pressure max. 2 bar (without Ex certification)
- ☒ with dust Ex certification zone 20 / 21 (ATEX)

### Max. measuring range

- ☒ 0 ... 20 m
- ☒ 0 ... 30 m
- ☒ 0 ... 40 m
- ☒ 0 ... 50 m
- ☒ 0 ... 70 m

### Output

- ☒ counter output, 100 mm resolution
- ☒ 0 / 4 ... 20 mA output, 100 mm resolution <sup>1)</sup>
- ☒ 0 / 4 ... 20 mA output, 1 ... 5 mm resolution <sup>1)</sup>

### Power supply

- ☒ 230 VAC, 50/60 Hz
- ☒ 42 V, 48 V, 115 V, 130 V, 250 VAC, 50/60 Hz

### Initiation of measuring start

- ☒ manual
- ☒ internal timer, adjustable

### Cover

- ☒ plastic cover (not for Ex certification zone 20 / 21)
- ☒ aluminium cover (for Ex certification zone 20 / 21)
- ☒ plastic cover with add. protective cover (not for Ex certification zone 20 / 21)

### Cable protecting tube

- ☒ without cable protecting tube
- ☒ with cable protecting tube, aluminium, 500 mm

### Heating

- ☒ without heating
- ☒ with heating, recommended with ambient temperatures < 10 °C

### Sensing weight

- ☒ plastic weight, PVC
- ☒ aluminium weight, Al
- ☒ stainless steel weight, 1.4571
- ☒ spider weight, VA, 1.4301
- ☒ spider weight, PE
- ☒ bag weight, linen
- ☒ perforated weight, for sediments in liquids, 1.4571

### Pneumatic connection

- ☒ without pneumatic connection
- ☒ with pneumatic connection



### Model code

MaihakLOT 369

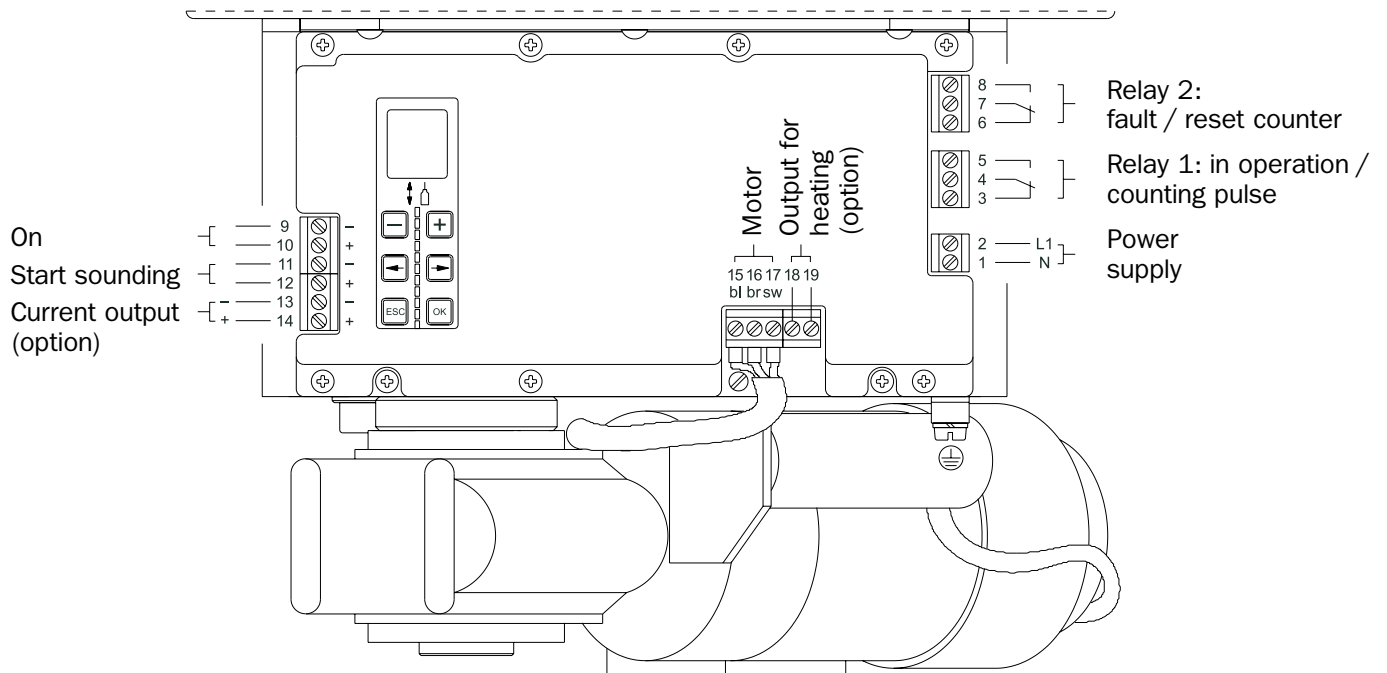
<sup>1)</sup> with 2 relays (changer) for "fault" and "MaihakLOT 369 operating"

## External display units

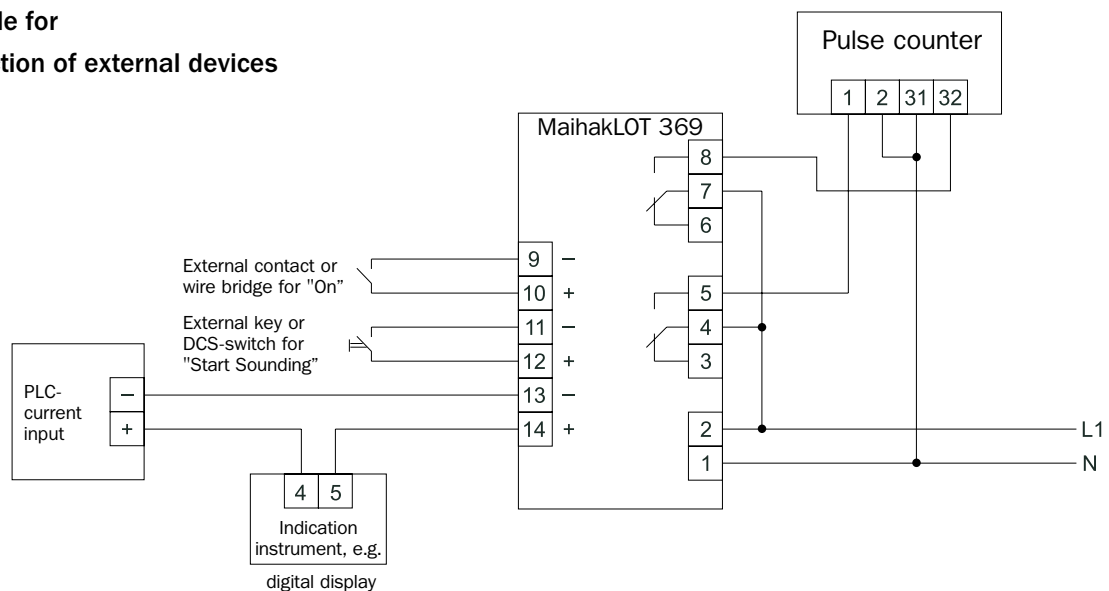
■ additional digital display for indicating 4 ... 20 mA signal (for output code B and C)

■ pulse counter (for output code A)

## Connection plan

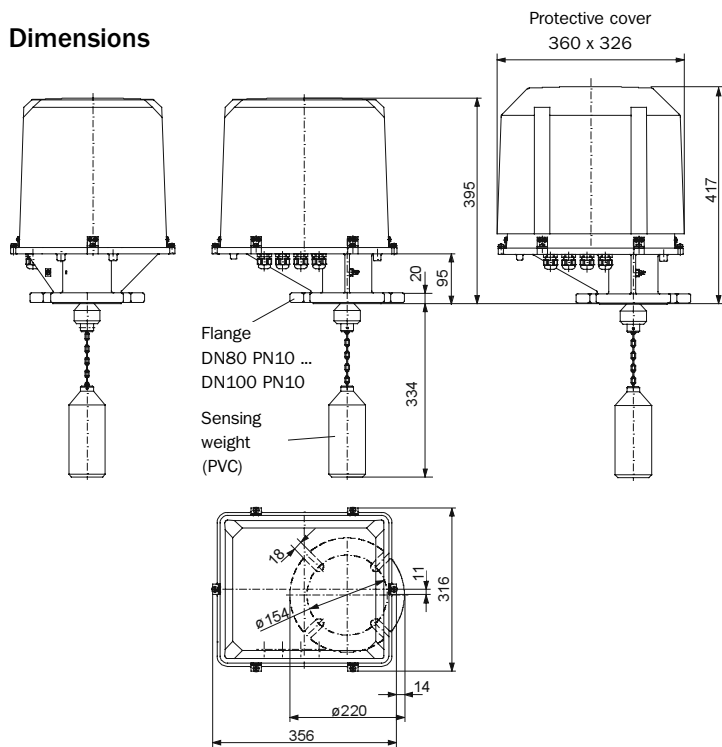


## Example for connection of external devices

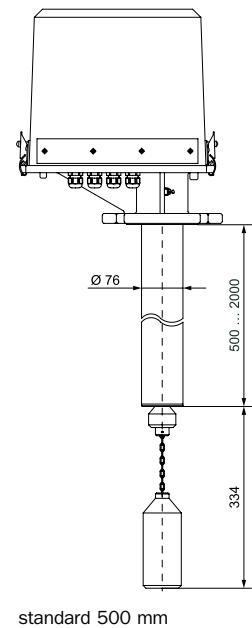


Relay switch position in currentless condition.

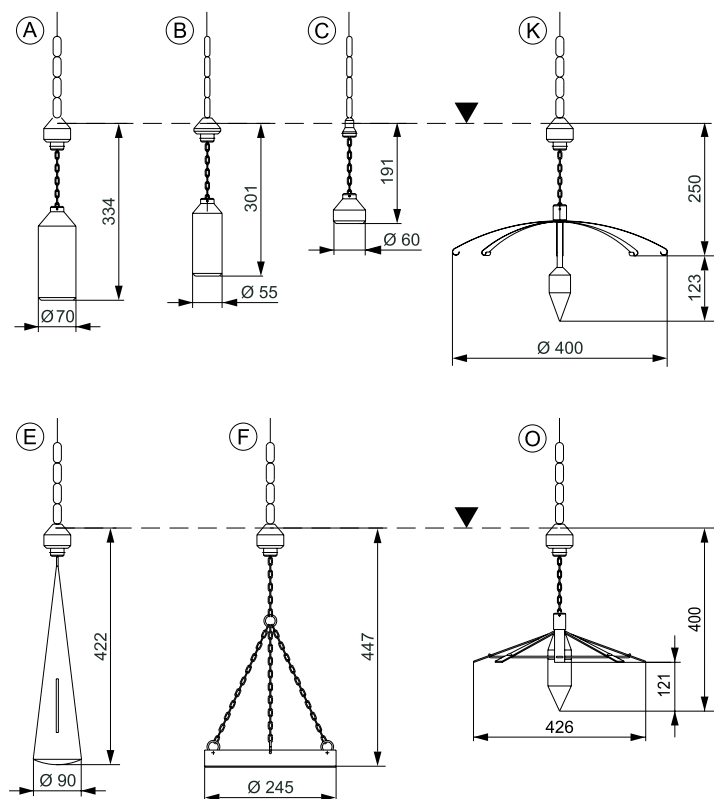
## Dimensions



## Cable protection tube



## Sensing weight



- A Plastic weight (PVC)
- B Aluminium weight (Al)
- C Stainless steel weight (1.4571)
- K Spider weight (VA)
- E Bag weight (linen)
- F Perforated weight (VA)
- O Spider weight (PE)

▼ lower edge of flange /  
lower edge of cable  
protection tube

All dimensions in mm.

## ANALYZERS AND PROCESS INSTRUMENTATION

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We can build on years of experience in the field of Analyzers and Process Instrumentation. That is why we are at home in the world of cement and power plants as well as in the chemical and petrochemical sector. Be it emission control at the waste treatment or process optimization for steel manufacturing, MBA offers tailor-made solutions.



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MBA offers a number of sensor-based techniques for analysis, ranging from the continuous gas and dust measurement to specialized applications for water and liquid analysis. Within the process measurement technology MBA products play a central role in determining volume flow of gases and level of bulk materials.



Where ever you are, our global network of subsidiaries and representatives is able to supply qualified support when you need it. We deliver the equipment for your measuring tasks, provide documentation and training. Our highly skilled service staff offers support during installation, commissioning and maintenance of the appliances.



### GROUP

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