

# MBA888

## Level Detection Switch for Bulk Materials

Installation, Operation

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**1. Safety information – for use in potentially explosive areas (Ex area)**

A level indicator of type MBA888 may only be used in potentially explosive locations if the individual specification of the unit complies with this use.

- Check the unit based on the rating plate in connection with the certification (ATEX).  
An approved unit bears the following marking:

⊕ II 1/2 D Ex ta/tb IIIC T100°C Da/Db

- Observe the regulations of the approvals
- Install a potential equalisation connection
- Prevent sparking from striking metal parts.
- Carry out the installation in accordance with the standard EN 60079-14.
- Observe the requirements of the EC type examination certificate
- Observe zone separation (see below).
- Only perform the electrical installation in a suitable terminal housing.

**2. Responsibility of the user**

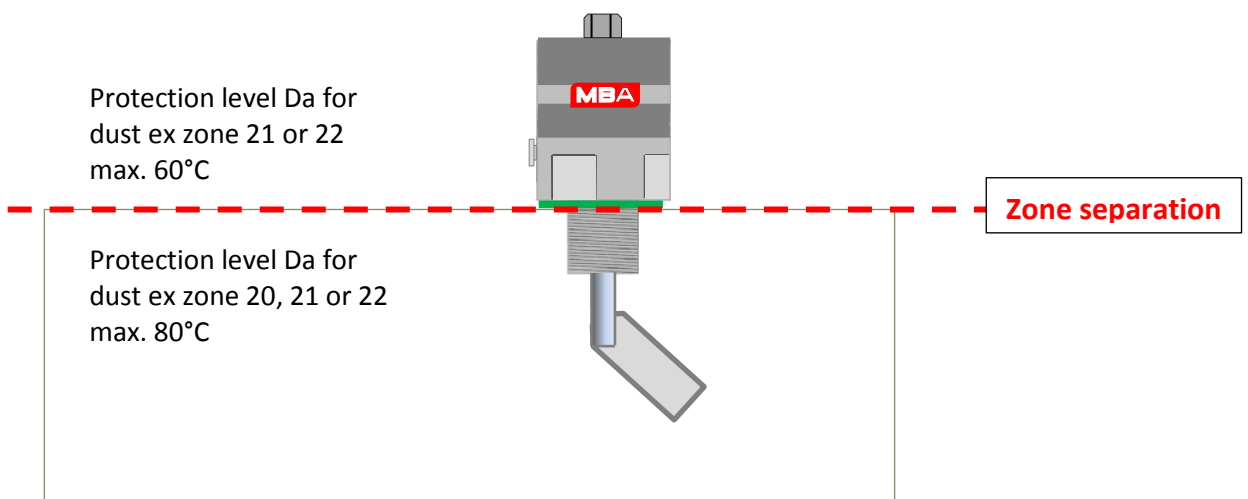
- Use the device only as described in these Operating Instructions. The manufacturer assumes no responsibility and no warranty for any other use.
- In addition to these Operating Instructions, follow all local laws, technical rules and internal company operating directives applicable at the respective installation location of the unit.
- The housing cannot be opened.
- Observe the specifications in connection with the voltage and temperature on the rating plate.

**3. Use**

The MBA888 is used as a level detection switch for all types of bulk materials. The unit must only be used for permanent installation in industrial plants (large tools).

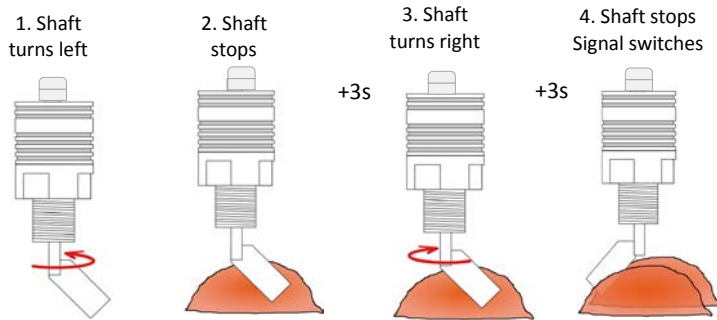
**4. Conformity:**

Explosion protection, general requirements..... IEC 60079-0 :2011  
Equipment dust explosion protection by enclosure "t" IEC 60079-31:2013  
Explosion protection, general requirements..... EN 60079-0 :2012  
Equipment dust explosion protection by enclosure "t" EN 60079-31:2015  
EMC..... EN 61000-6-4: Sept. 2011 (industrial area)  
..... EN 61000-6-2: March 2006 (industrial area)  
Vibration:..... IEC 60068-2-6, IEC 60068-2-27  
Low voltage: ..... EN 61010-1: 2011



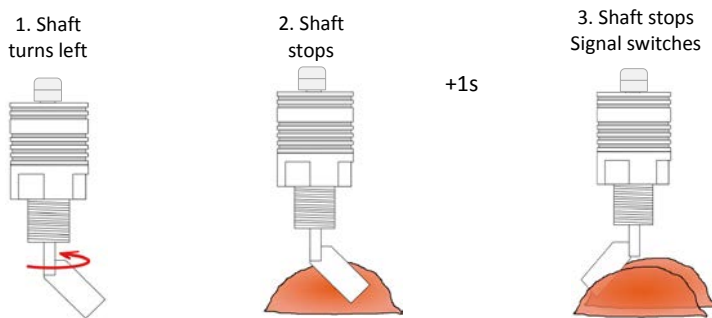
**5. Function and switching behaviour**

A motor turns a shaft with a paddle attached to the end. If the paddle hits the bulk material, then torque is built up until the shaft stops. The shaft then changes the direction of rotation. If the shaft is blocked in both directions, then the signal is switched.



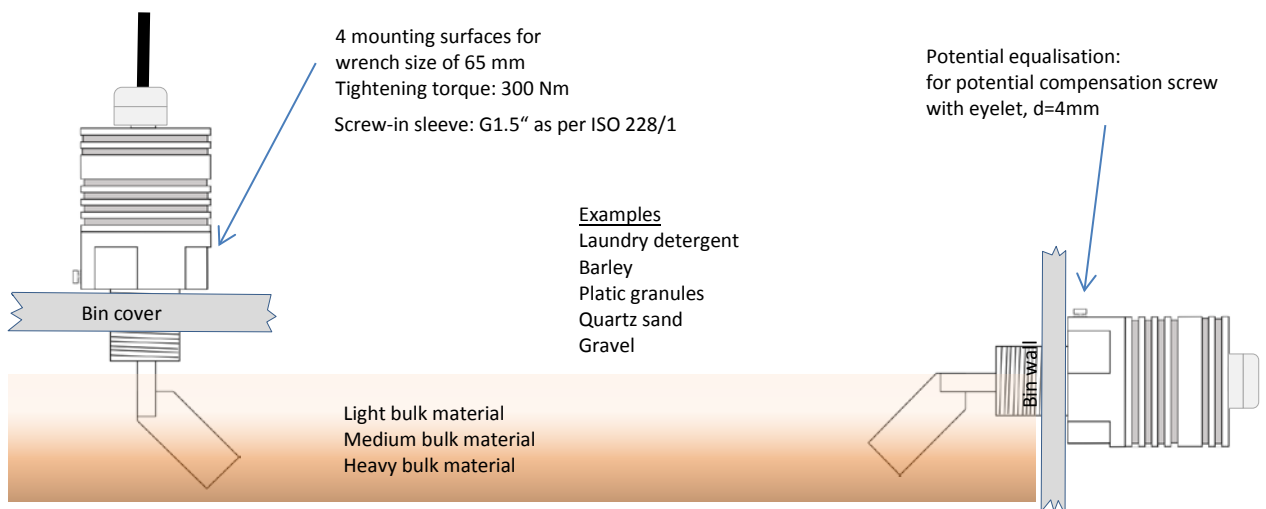
**“Quick Switch” device model:**

In this model, the MBA888 checks for blocking of the shaft rotation in only one direction. That way, very quick switching of the full sensor is possible:



**6. Installation**

The MBA888 is screwed into a matching sleeve with the process connection. The position for the installation must be selected such that the paddle on the end of the shaft is covered by the bulk material at the switching point. Light or fluid bulk material must cover the paddle somewhat more than a heavy bulk material. The measurement is independent of the installation position of the MBA888.



7. Installation of MBA888 24V DC

7a. Without ATEX (with M12 plug connectors)

24V DC model with plug connector

A 4 or 5 pin M12 coupling with A coding is required for the electrical connection. The cable must be permanently installed.

**Assignment of the coupling**

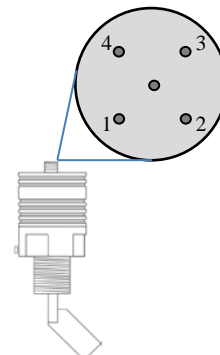
1	24V DC ±10% operating voltage
2	Signal: 24V paddle turns /0V paddle is blocked, max current: 1.2 A
3	0 V
4	Ready to use: 24V operation / 0V malfunction

**Output signal**

Stranded wires 2 – 3	Reaction	Cause
+24V DC	The shaft turns	The bin is empty
0V	The shaft doesn't turn	The bin is full

**Operational monitoring**

Stranded wires 4 – 3	Operating status	Measures
+24V DC	Function is ok	None
0V	Fault in the function	Functional check required



7b. With threaded cable gland and cable

24V DC model

The MBA888 is delivered with a readymade cable. The stranded wires on the end of the cable are numbered with 1 to 4 and must be put on in a suitable terminal compartment. The housing is included in the potential equalisation. The cable must be permanently installed.

**Assignment of the stranded wires**

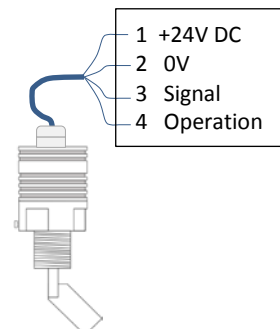
1	24V DC ±10% operating voltage
2	0 V
3	Signal: 24V paddle turns /0V paddle is blocked, max current: 1.2 A
4	Ready to use: 24V operation / 0V malfunction

**Output signal**

Stranded wires 2 – 3	Reaction	Cause
+24V DC	The shaft turns	The bin is empty
0V	The shaft doesn't turn	The bin is full

**Operational monitoring**

Stranded wires 4 – 2	Operating status	Measures
+24V DC	Function is ok	None
0V	Fault in the function	Functional check required



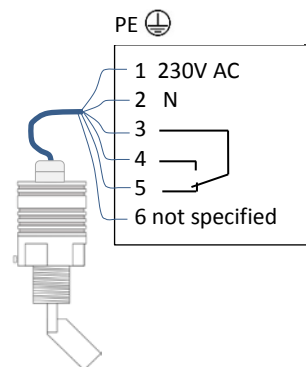
8. Installation MBA888 115 ... 230V AC

115 ... 230V AC model

The MBA888 is delivered with a readymade cable. The stranded wires on the end of the cable are numbered with 1 to 5 and must be put on in a suitable terminal compartment. The housing is included in the potential equalisation. The cable must be permanently installed.

**Assignment**

	GN / GE PE
1	115V ... 230V AC operating voltage
2	N
3	Main contact relay
4	Switch contact 1 relay
5	Switch contact 2 relay
6	not connected



The relay switches as a changeover contact. The contacts are potential-free.

**Output signal**

Stranded wires 3 – 4	Stranded wires 3 – 5	Reaction	Cause
closed	open	The shaft turns	The bin is empty
open	closed	The shaft doesn't turn	The bin is full

**Safety-oriented switching as a full sensor**

If the MBA888 detects a malfunction, or in the event of the failure of the operating voltage, the relay switches and shows the status "Bin is full".

9. Maintenance

The MBA888 is maintenance free. Nevertheless, the function should be checked regularly, at least once a year.

10. Operating data

	MBA888 – 24V DC model	MBA888 – 115V... 230V AC model
Operating voltage:	24V DC	115V ... 230V AC
Current consumption:	max. 250mA + current on the signal output	6 VA
Signal :	24/0 V DC max. 1.2A	Potential free changeover contact max. 6A
Operational monitoring:	24/0 V DC max. 1.2A	See "safety-oriented switching" max. 6A
Power cord:	LAPP Ölflex Classic 400P 4x0.5 mm <sup>2</sup> Standard length: 2m (other lengths on request)	LAPP Ölflex Classic 400P 7 G 0,5mm <sup>2</sup> Standard length: 2m (other lengths on request)

**With Atex:**

- Temperature in the bin: -20 to +80 °C
- Ambient temperature: -20 to +60 °C
- Ambient pressure: 0.8 to +1.1 bar
- Housing protection class: IP65 – Water- and dustproof
- Shaft: Ø12 mm, stainless steel 1.4305  
Immersion depths: 120 mm or 180 mm or 250 mm
- Paddle: Stainless steel 1.4305 welded onto the shaft
- Seals: VITON and PTFE gasket  
Motor shaft sealed in addition (VITON)
- Housing: Aluminium or stainless steel 1.4305

**Without ATEX:**

- Temperature in the bin: -30 to +80 °C
- Ambient temperature: -30 to +60 °C
- Ambient pressure: 0.8 to +3 bar

**Switching time**

	Standard	Quick Switch
If shaft is blocked:	6s	1s
If shaft is free:	3s	3s

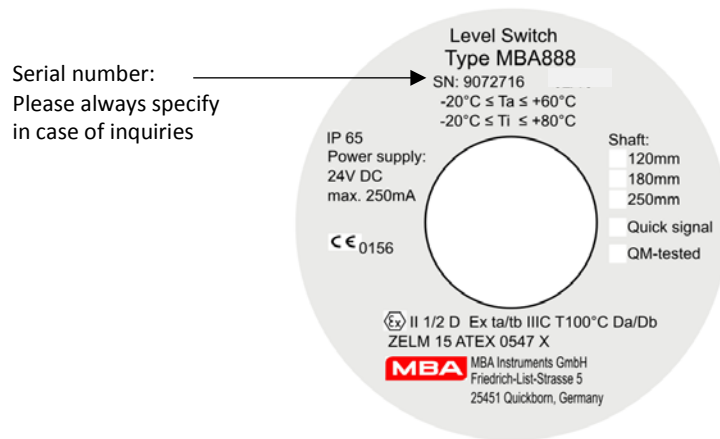
Device identification

Ex identification



Type examination certificate: Zelm 15 ATEX 0547 X

11. Type plate (example)



12. Dimensions

