

MBA888 Level Switch for Bulk Goods

Installation and Operation



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1. Safety information – for use in explosion-hazardous areas (areas with potentially explosive atmosphere)

A level indicator of type MBA888 may be used in an explosion-hazardous area only if permitted by the individual device specification.

- Check the device's rating plate in order to establish whether the approval (ATEX) applies.

An approved device will have the following marking:

 II 1/2 D Ex ta/tb IIIC T100°C Da/Db

- Follow the regulations specified in the approval.
- Fit an equipotential-bonding lead.
- Prevent sparking as the result of metal parts striking each other.
- Wiring must be performed in accordance with Standard EN 60079-14.
- Follow the regulations of the EC Type-Examination Certificate.
- Comply with zone separation (see below).
- Connect electrical wiring only in a suitable terminal box.

2. User's responsibility

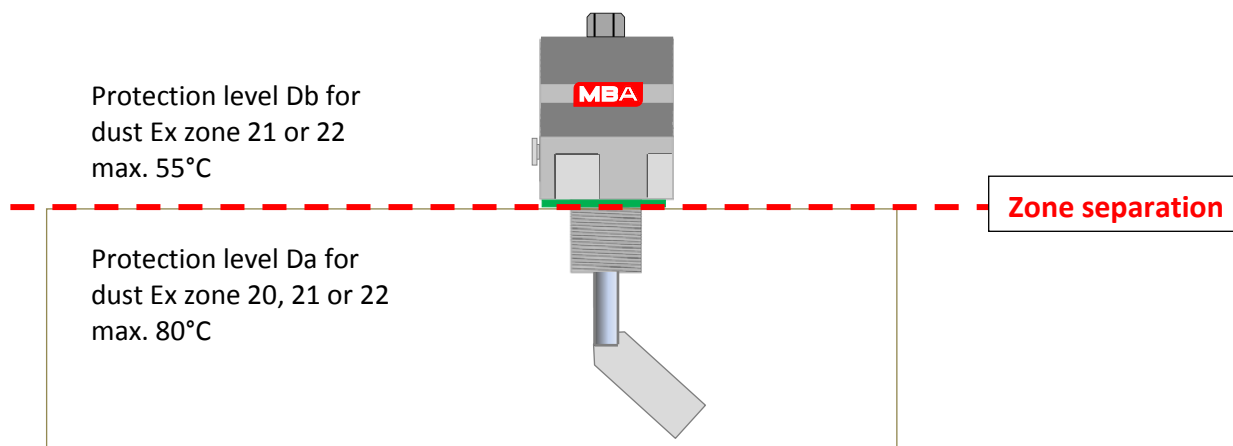
- Use the device only as described in these Operating Instructions. The manufacturer is unable to assume any liability or warranty for other uses.
- Follow all local legislation, technical regulations and in-company directives applicable to the device's place of use, in addition to these Operating Instructions.
- The housing cannot be opened.
- Comply with the voltage and temperature specifications on the rating plate.

3. Use

The MBA888 is used as a level switch for all types of bulk goods. The device may be used only for fixed installation in industrial plant (large machine tools).

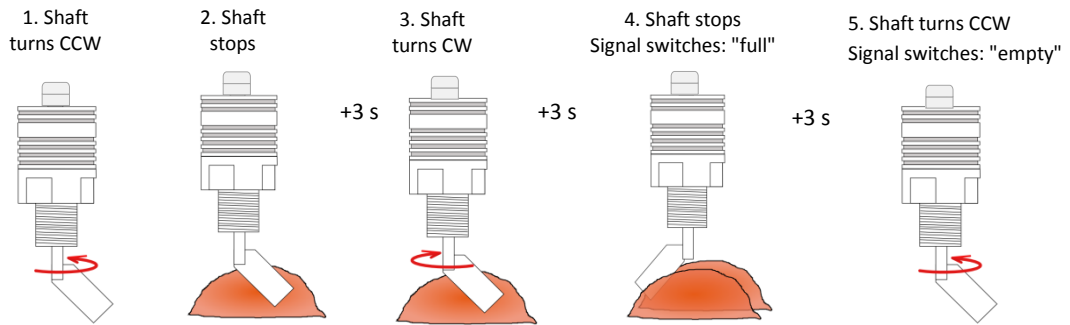
4. Conformity:

Explosion Protection, General Requirements IEC 60079-0:2011
Device Dust Explosion Protection by Housing "t" IEC 60079-31:2013
Explosion Protection, General Requirements EN 60079-0:2012
Device Dust Explosion Protection by Housing "t" EN 60079-31:2015
EMC EN 61000-6-4: Sept. 2011 (industrial applications)
..... EN 61000-6-2: Mar. 2006 (industrial applications)
Vibration:..... IEC 60068-2-6, IEC 60068-2-27
Low Voltage:..... EN 61010-1: 2011



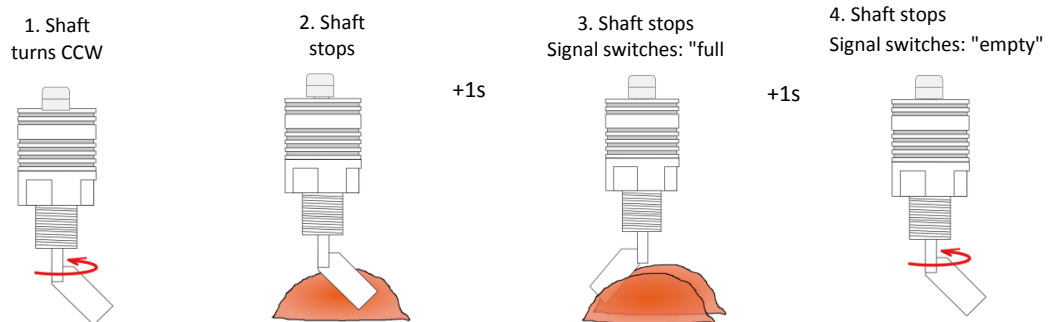
5. Function and switching behaviour

A motor rotates a shaft, with a vane secured to the end of the shaft. If the vane strikes the bulk material, a torque builds up until the shaft stops rotating. The shaft then reverses its direction of rotation. The signal switches when shaft rotation is blocked in both directions.



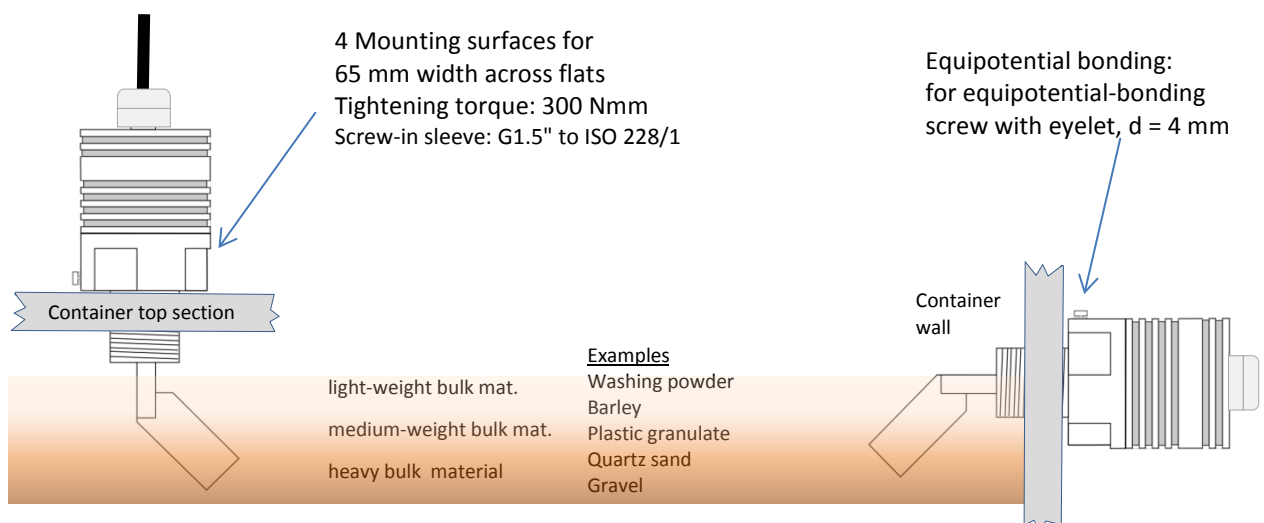
"Quick Switch" device design:

On this version, the MBA888 checks whether shaft rotation is blocked in one direction only. This means that the very fast switching allows the device to be used as a "Full" indicator:



6. Installation

The MBA888 is screwed into a suitable sleeve with the process connection. The installation position must be selected such that the vane at the end of the shaft is covered by the bulk material at the switching point. Light-weight or fluid bulk material must cover the vane a little more than is the case with heavy bulk material. Measurement is independent of the MBA888's installation position.

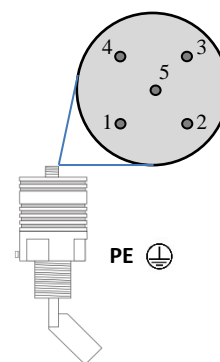


7. Electrical connection MBA888

7.1 With M12 plug connector

A 5-pin A code M12 coupling connector is required for electrical connection. The cable must be a fixed installation.

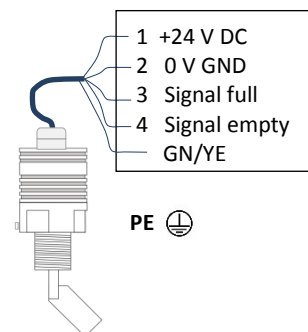
Coupling connector assignment		MBA888**K* *00000-*_** 24 V DC variant	MBA888**A* *00000-*_** 12 V DC variant
1	Operating voltage	24 V DC ±10%	12 V DC ±10%
2	Shaft Blocked signal: " Container full"	24 V/0 V, max. 1.2 A	12 V/0 V, max 1.2 A
3	GND	0 V	0 V
4	Shaft rotating signal: " Container empty"	24 V/0 V, max. 1.2 A	12 V/0 V, max. 1.2 A
5	PE wire	PE wire	PE wire



7.2 With screwed cable gland and cable version

The MBA888 is supplied with a ready-to-use cable. The flexible leads at the end of the cable are numbered 1 to 5 and must be connected in a suitable terminal compartment. The housing is included in the equipotential-bonding system. The cable must be a fixed installation.

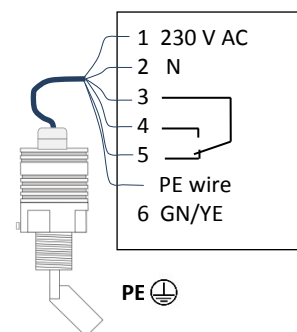
Flexible-lead assignment 5G 0,5		MBA888**K* *00000-*_** 24 V DC variant	MBA888**A* *00000-*_** 12 V DC variant
1	Operating voltage	24 V DC ±10%	12 V DC ±10%
2	GND	0 V	0 V
3	Shaft Blocked signal: "Container full"	24V /0 V, max. 1,2 A	12V /0 V, max 1,2A
4	Shaft rotating signal: "Container empty"	24 V/0 V, max. 1.2 A	12 V/0 V, max. 1.2 A
	GN/YE PE wire		



8. Electrical connection MBA888 115 ... 230 V AC

The MBA888 is supplied with a ready-to-use cable. The flexible leads at the end of the cable are numbered 1 to 6 and must be connected in a suitable terminal compartment. The housing must be included in the equipotential-bonding system. The cable must be a fixed installation.

Flexible-lead assignment 7G 0,75		MBA888**L* *00000-*_** 115..230 V AC variant
1	Operating voltage	115 V ... 230 V AC ±10%
2	N	
3	Relay main contact	floating
4	Relay main contact 1	Empty indicator
5	Relay main contact 2	Full indicator
	GN/YE PE wire	
6	not used	



The relay switches as a changeover contact. The contacts are floating.

Output signal

Behaviour	Cause	Flexible lead 3 – 4	Flexible lead 3 – 5
Shaft rotates	Container is empty	closed	open
Shaft does not rotate	Container is full	open	closed

Safety-related circuit, for use as Full indicator

If the MBA888 detects a malfunction or if the operating voltage fails, the relay drops out and displays status "Container is full".

9. Maintenance

The MBA888 is maintenance-free. Nevertheless, you should regularly check proper functioning of the device at least once per annum.

10. Operating data

	MBA888 24 V DC	MBA888 12 V DC	115 V... 230 V AC
Operating voltage:	24 V DC	12 V DC	115 V ... 230 V AC
Current consumption:	max. 90 mA (not including output load)	max. 120 mA not including output load)	6 VA
Signal:	24/0 V DC max. 1.2 A	12/0 V DC max. 1.2 A	Floating changeover contact max. 6 A
Connection cable:	LAPP Ölflex Robust 210 5 G 0.5 mm ² Standard length: 2 m (other lengths on request)		LAPP Ölflex Robust 210 7 G 0.75 mm ² Standard length: 2 m (other lengths on request)

With ATEX:

Temperature in container: -20 to +80°C
 Ambient temperature: -20 to +55°C
 Ambient pressure: 0.8 to +1 bar

Without ATEX:

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

Housing enclosure: IP65 – Water-tight and dust-tight

Seals and gaskets: VITON and PTFE gasket
 Motor shaft with additional seal (VITON)

Process connection

Housing: Aluminium or stainless steel 1.4305

Switching time

	Standard	Quick Switch
if shaft blocked:	6 s	1 s
if shaft not blocked:	3 s	1 s

Device marking

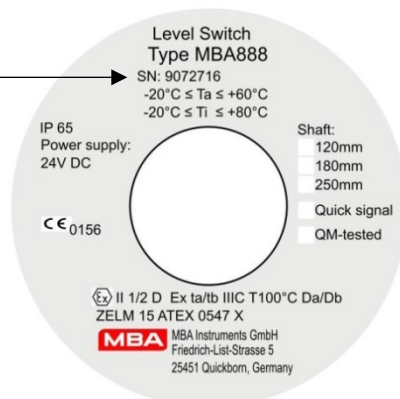
Ex marking:



Type-Examination Certificate: ZELM 15 ATEX 0547 X

11. Rating plate (example)

Serial number:
Please always specify queries/enquiries





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