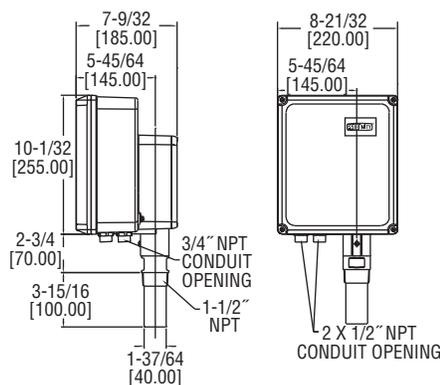


**PROXIMITY**<sup>®</sup>**Series DBOB-Continuous Level Measuring System****Specifications - Installation and Operating Instructions**

The Series DBOB is a low maintenance, electromechanical device designed for the continuous measurement of level or volumes in silos, tanks, or hoppers. The DBOB utilizes an internal motor that drives a weight suspended by a firm stainless steel tape down to the bulk material level. Upon reaching the material, the unit reverses and the weight is drawn back into the upper stop position. The distance the weight descends is electronically measured based on the internal rotations of the unwinding tape. The DBOB is user-programmable to output either a height signal or a volumetric signal based on the vessel geometry. The unit's two programmable relays offer even more customization.

The 1-1/2" NPT process connection allows for simple installation on horizontal surfaces and an optional aiming flange is available for inclines. The integrated tape cleaner keeps the internal process protected from difficult material and the tough cast housing protects the unit from its surroundings. With an easy to understand measurement principle and inherent low maintenance qualities, the Series DBOB is perfect for your level measuring needs.

**FEATURES**

- Measurement range up to 100 ft (30 m)
- Optional aiming flange for versatile mounting
- Accurate measurement
- Independent of bulk material properties
- Tangle free tape-based system

**SPECIFICATIONS**

**Service:** Powder and bulk materials compatible with wetted materials.

**Wetted Materials:**

- Mounting Thread: Aluminum;
- Aiming flange: Aluminum and 304 SS;
- Tape: 301 SS;
- Sensor weight: PVC or 303 SS;
- Fixing elements between tape and sensor weight: Aluminum and 303 SS.

**Other Material:** Housing: Powder-coated aluminum.

**Temperature Limits:**

- Process temperature: -40 to 176°F (-40 to 80°C);
- Ambient temperature: -4 to 140°F (-20 to 60°C)
- (Relative humidity: 0 to 100%).

**Pressure Limit:** -3.0 to 3.0 psi (-0.2 to 0.2 bar).

**Enclosure Rating:** NEMA 4 (IP66).

**Electrical Rating:** 2 A @ 250 VAC.

**Power Requirements:** 115 VAC, 50/60 Hz.

**Output Signal:** 4 to 20 mA.

**Accuracy of Output Requirement:** 1% of measured length.

**Power Consumption:** AC model: 150 VA.

**Electrical Connection:** One 3/4" NPT and two 1/2" NPT conduit opening, screw termination with removable terminal block.

**Connection Terminals:** AWG 26 to 14 (0.14 to 2.5 mm<sup>2</sup>).

**Process Connection:** 1-1/2" male NPT.

**Mounting Orientation:** Vertical.

**Deviation of Vertical Mounting:** Max. 2°.

**Set Point Adjustment:** Trips when weight reaches product.

**Sensitivity:** Min. powder density: 18 lb/ft<sup>3</sup> (300 g/l).

**Measuring Range:** 100 ft (30 m).

**Measuring Speed:** Average 0.6 ft/sec (0.2 m/s).

**Maximum Permitted Tractive Force:** 180 lbf (800 N).

**Maximum Altitude:** 6562 ft (2000 m) for CE approval.

**Display:** LCD.

**Indication Light:** LED: Power on, relay, failure.

**Memory:** Non-volatile: >10 years data retention (no backup battery required).

**Weight:** 20 lb (9 kg).

**Approvals:** CE, FM Class. II, III Div. 1 Gr. E-G.

**FUNCTION**

The DBOB is mounted on top of the silo. An internal motor drives a weight suspended by a firm stainless steel tape down to the bulk material level. Upon reaching the material, the unit reverses and the weight is drawn back into the upper stop position. The distance the weight descends is measured based on the internal rotations of the unwinding tape.

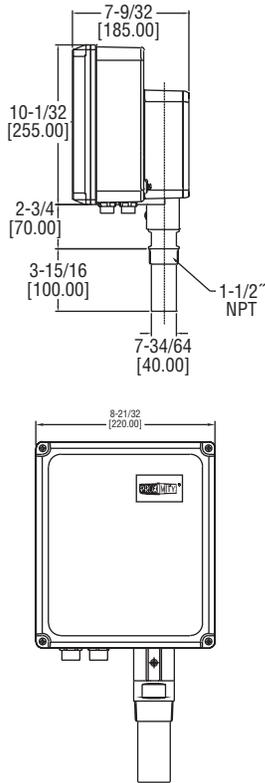
The microcontroller converts the measured distance into an output signal, which is a volumetric signal based on the silo geometry. The output signal is updated when the sensor weight touches the bulk material.

**DIAGNOSTICS**

Comprehensive diagnostics possibilities are present:

- Measurement control is done by comparing the moved distance up and the moved distance down and checking for discrepancy. In case of discrepancy, the sensor weight is pulled to the upper stop position to ensure that the sensor weight is not inside the silo.
- Factory-programmed service intervals and other descriptive failure codes.

**DIMENSIONS**



**ACCESSORIES**

**Weather Protection Cover (DBOB-PC)**

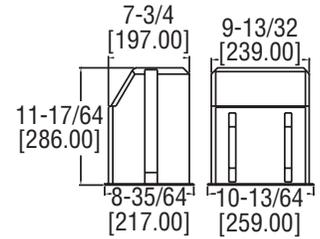
If the unit is used outdoors, the use of the weather protection cover is recommended. It protects the device from atmospheric influences such as:

- rain water
- condensation water
- excessively high temperatures
- excessively low temperatures in winter

Material: PE, weather and temperature stable.

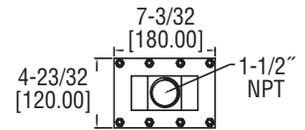
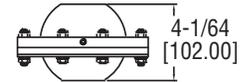


Do not use the DBOB-PC Weather Protection Cover in hazardous locations.



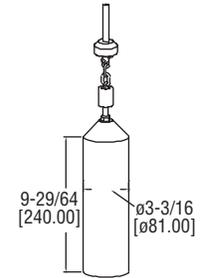
**Aiming Flange (DBOB-AF)**

- Allows the unit to maintain a vertical position in incline mounting applications.
- 0 to 50° adjustable
- Includes screws, nuts and sealing

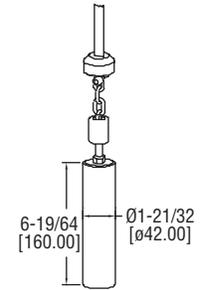


**PVC Weight (DBOB-W1)**

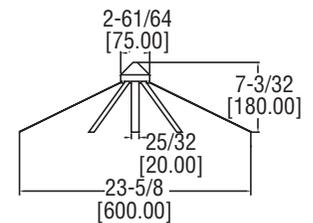
- Weight
- Stainless steel



**Stainless Steel Weight (DBOB-W3)**



**Stainless Steel Spider Weight (DBOB-W5)**



## MOUNTING

### **CAUTION** General Safety Instructions

<b>Process pressure</b>	Improper installation may result in loss of process pressure.
<b>Chemical resistance against the medium</b>	Materials of construction are chosen based on their chemical compatibility (or inertness) for general purposes. For exposure to specific environments, check chemical compatibility charts before installing.
<b>Mounting location</b>	The right mounting place is necessary for proper function. Observe mounting instructions.
<b>Vibrations</b>	Avoid mounting in an environment with strong vibration. Use rubber mounts for absorption in case of light vibrations.
<b>Recommended minimum time between measuring start (to allow for cooling of motor)</b>	Measuring height: 16 ft (5 m): 3 min; Measuring height: 33 ft (10 m): 6 min; Measuring height: 66 ft (20 m): 12 min; Measuring height: 98 ft (30 m): 18 min.

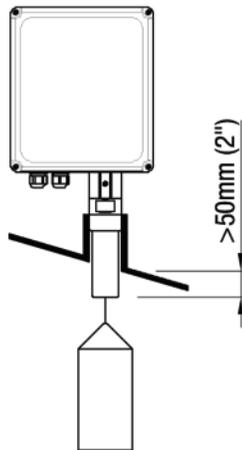
### **CAUTION** Additional Safety Instructions For Hazardous Locations

<b>Installation regulations</b>	For devices to be used in hazardous locations the respective valid installation regulations must be observed.
<b>Sparks</b>	The installation has to be done in a way that mechanical friction or impact does not cause sparks between the aluminum enclosure and steel.

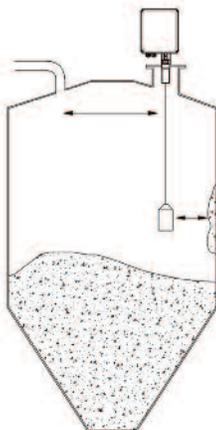
## MOUNTING INSTRUCTIONS

### Mounting Position

- The unit is mounted vertically on the silo. Max. deviation is 2°.
- There must be at least 7.87" (200 mm) space for the sensor weight to move down in case of a full silo. Observe the bottom of the sensor weight at "upper stop position" (dimensions see page 2).
- The socket pipe of the unit must protrude at least 2" (50 mm) into the silo. A version with longer socket pipe is available.



- Proper movement of the sensor weight must be guaranteed; maintain enough distance to the silo wall, stanchions and built-in fittings.



<b>Measurement during filling of the silo</b>	Filling of the silo while measuring might cover the sensor weight with bulk material. Measurements during filling are possible if there is enough distance to the infeed so that no material can fall on the sensor weight.
<b>Sealing</b>	<ul style="list-style-type: none"> <li>• A rubber seal must be used around the thread or flange.</li> <li>• Close both lids of the enclosure tightly.</li> </ul>

### Mounting With Aiming Flange

The aiming flange allows the unit to mount directly on the roof of a silo without the need of a socket.

1. Find the right mounting position (see page 3). To ensure a proper sealing of the rubber on a shaped silo roof, the distance "R" from the center of the silo to the mounting position must be  $> 19.7"$  (500 mm).

2. Mark ten drilling holes "A" and the cutaway "B" with a marker on the silo roof. Use the attached template.

**CAUTION** While doing steps 3 and 4, ensure that swarfs or any parts can not fall into the silo.

3. Drill ten holes "A" with a  $3/8"$  (9.5 mm) drill. Use a grinder to cut out the shape "B".

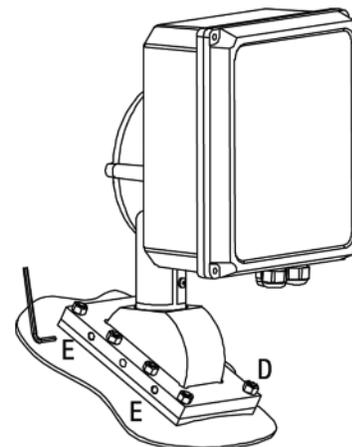
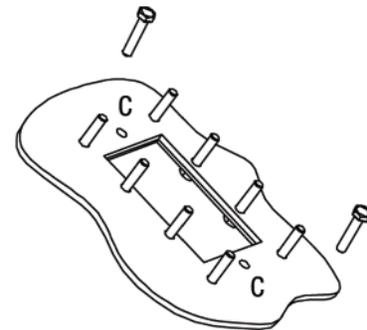
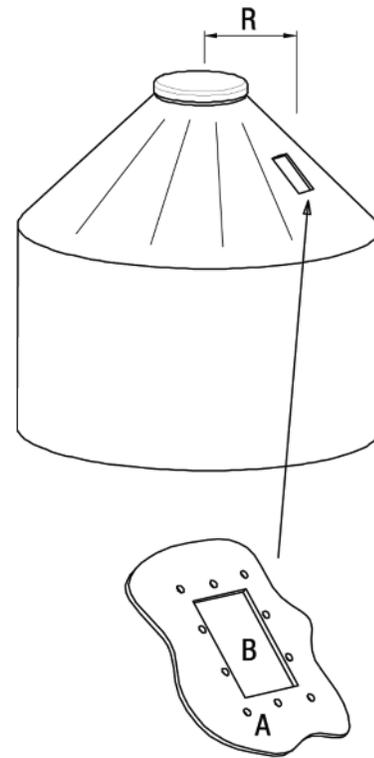
4. Insert the clamping plate from inside the silo and fix with two screws "C".

5. Apply the rubber sealing over the shafts from the outside.

**CAUTION** If the rubber sealing is positioned on the inside of the roof, the sealing may not be water and dust tight.

6. Mount the DBOB. Fix equally and crosswise all eight nuts "D", first with a low torque then increase up to a torque of 1.5 lbf (2Nm).

7. Adjust the unit to a vertical position (deviation of max.  $2^\circ$ ) by using a water level. Fix two screws "E" with a torque of 11.1 lbf (15Nm).

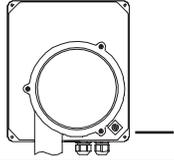


## ELECTRICAL INSTALLATION

### **CAUTION** General Safety Instructions

<b>Handling</b>	In case of improper handling or handling malpractice, the electric safety of the device cannot be guaranteed.
<b>Fuse</b>	Use a fuse as stated in the connection diagrams.
<b>RCCB protection</b>	In case of a fault, the supply voltage must be automatically switched off by a RCCB protection switch to protect against indirect contact with dangerous voltages.
<b>Power supply switch</b>	A voltage disconnection switch must be provided near the device.
<b>Wiring diagram</b>	The electrical connections are made in accordance with the wiring diagram.
<b>Supply voltage</b>	Compare the supply voltage applied with the specifications given on the name plate before switching the device on.
<b>Cable gland</b>	Make sure that the screwed cable gland safely seals the cable and that it is tight (danger of water intrusion). Cable glands that are not used have to be sealed with a blanking element.
<b>Conduit system</b>	In case of using a conduit system (with NPT thread) instead of a cable gland the regulations of the country, where the unit is installed, must be observed. The conduit must have a tapered thread either 1/2" NPT or 3/4" NPT in accordance with the unit and ANSI B 1.20.1. Not used inlets must be closed tight with a metal blanking element.
<b>Field wiring cables</b>	All field wirings must have insulation suitable for at least 250VAC. The temperature rating must be at least 176°F (80°C).
<b>Relay protection</b>	Provide protection for relay contacts to protect the device against inductive load surges.
<b>Protection against static charging</b>	The housing of the unit must be grounded to avoid static charging of the unit. This is particularly important for applications with pneumatic conveying and non-metallic containers.

### **CAUTION** Additional Safety Instructions for Hazardous Locations

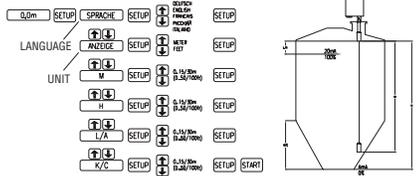
<b>External equipotential bonding terminal</b>	
<b>Field wiring</b>	A strain relief must be provided for the field wiring cables if the device is installed with the factory provided cable glands.
<b>Conduit system for FM hazardous locations</b>	In addition, the regulations of the country must be observed. The use of flameproof seals and blanking elements must have an adequate type approval and a temperature range as defined in the technical data of the unit. In addition, they shall be suitable for the conditions and correctly installed. Where applicable, the provided original parts of the manufacturer must be used.
<b>Commissioning/opening the lid</b>	Commissioning only when there are no dust deposits or swirls present

## Terminal Location

### CONNECTION



### QUICKSET



### MESSAGES

- See instruction manual
- M11** Sensor weight blocked
- START** Reset message
- F10** Motor or motor driver electronic defect
- r11** Sensor weight buried
- f12** Rope-tape broken
- F15** Not enough supply current (DC)
- F16** Service interval rope-tape
- r17** Service interval motor

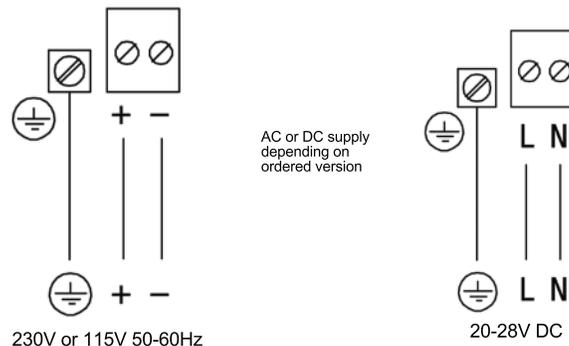
**START** **SETUP** >2 **SEC** Reset Message

## Power Supply and Signal Input/Output

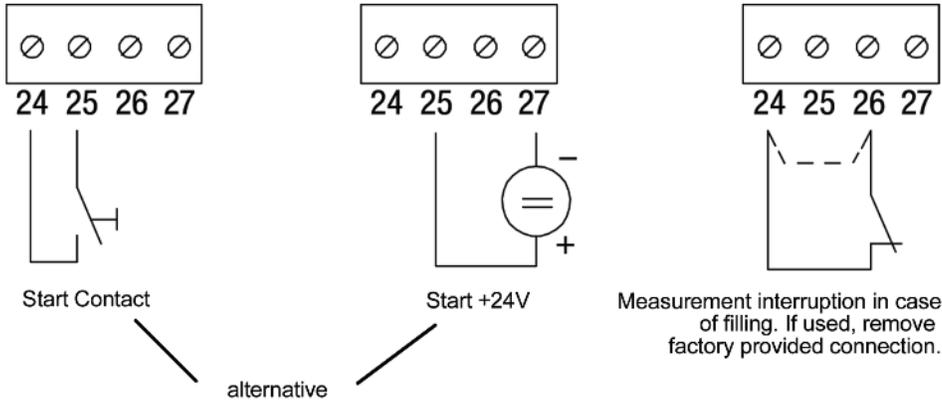
### Power Supply

#### AC Version

#### DC Version

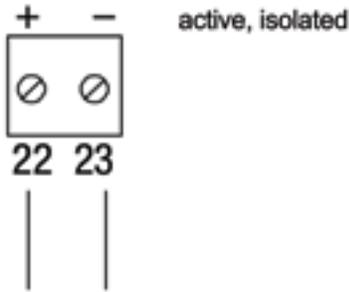


**Signal Input: Start of Measurement**



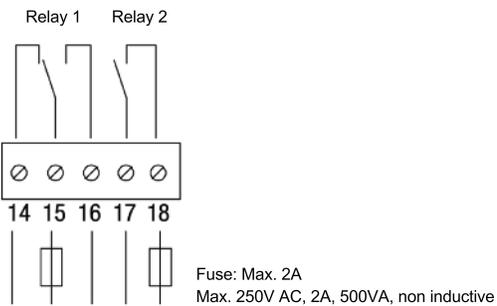
**SIGNAL OVERVIEW**

Signal Output: 0/4 to 20mA



Max. 500 Ohms

**Signal Output: Relays**



**Signal Input/Output**

<p><b>Signal Input:</b> <b>Start of measurement</b></p>	<ul style="list-style-type: none"> <li>• Floating contact (terminal 24, 25) or</li> <li>• 24VDC voltage (terminal 25, 27), current consumption approx. 25 mA, observe the polarity.</li> </ul> <p>Duration of starting signal: 0.7 to 5s. The contact must be closed or the 24V signal must be present to start.</p> <p><b>Measurement interruption</b> Used to avoid a measurement in case of filling and to interrupt a running measurement when filling starts. When the terminal 24 and 26 are opened, the sensor weight returns to the upper stop position. If required, remove factory provided wire between terminal 24 and 26 and connect to the filling coupling. The contact must be closed to enable a measurement.</p>									
<p><b>Signal Output:</b> <b>4 to 20 mA</b></p>	<p>Programmable to indicate a level or a volume signal. The output is updated when the sensor weight touches the surface of the bulk good. It stays until the next measurement is done.</p>									
<p><b>Signal Output Relays</b></p>	<p>Relays can be set as shown in the following table:</p> <table border="1" data-bbox="324 1774 779 1848"> <thead> <tr> <th></th> <th>Relay 1</th> <th>Relay 2</th> </tr> </thead> <tbody> <tr> <td>Factory settings</td> <td>Failure</td> <td>Upper stop position</td> </tr> <tr> <td>Programmable</td> <td>Reset pulse</td> <td>Counting pulse</td> </tr> </tbody> </table> <p><b>Relays Set to "Upper Stop Position/Failure"</b> Relay 1: Indicates a failure (see also diagnostics "Failure" on page 10). Relay 2: Indicates "Upper stop position". The signal allows the user to determine whether the measurement has come to its end. In this case, the sensor weight is in its upper stop position and the relay contacts are closed.</p>		Relay 1	Relay 2	Factory settings	Failure	Upper stop position	Programmable	Reset pulse	Counting pulse
	Relay 1	Relay 2								
Factory settings	Failure	Upper stop position								
Programmable	Reset pulse	Counting pulse								

	Relay 1	Relay 2
	Failure	Upper Stop Position
Present	14 15 16	17 18
Not Present	14 15 16	17 18

#### Relays Set To Counting/Reset Pulse:

The counting pulse output is used to connect an external digital counter or a PLC with counting input.

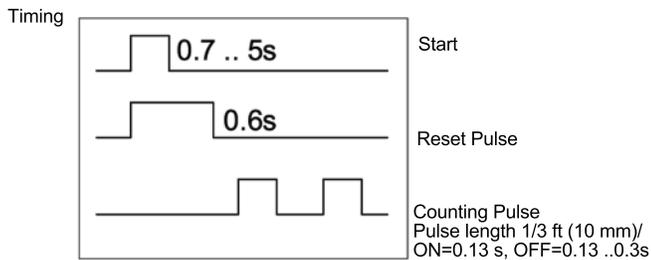
#### Reset pulse (terminal 15 and 16, Relay 1):

After start of measurement, a reset pulse is given. It is used to reset the connected evaluation device (counter/PLC, ...).

#### Counting pulse (terminal 17 and 18, Relay 2):

The counting pulse communicates the measured value to the connected evaluation device. During the downward movement of the sensor weight, this pulse is generated according to the following table:

**NOTICE** If the used digital counter or PLC requires a common ground for reset and counting pulse, the terminals 15 and 17 can be connected together.



#### LED Status

LED	Status
LEDs next to display	Green is on Power On Red is on Failure Red is blinking Maintenance
LEDs next to relay terminals	Yellow is on Relay is energized

#### DIAGNOSTICS SIGNALS

##### Failure

Result is a non-valid measurement.  
Red LED is on. Relay indicates failure (if selected).  
The signal indicates critical situations. Evaluation can help to avoid losing the sensor weight inside the silo.

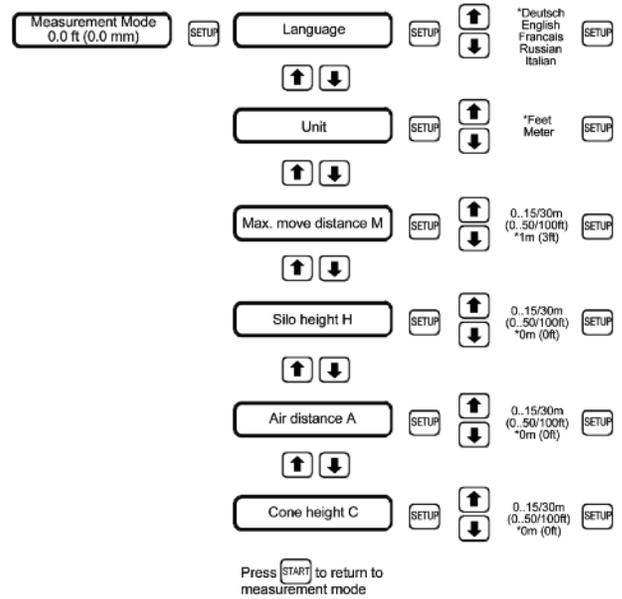
If failure is indicated, the unit must be checked on site.

Failure codes description, see page 10.

#### QUICKSET MENU

The Quickset Menu is used for fast and easy start-up of the system.

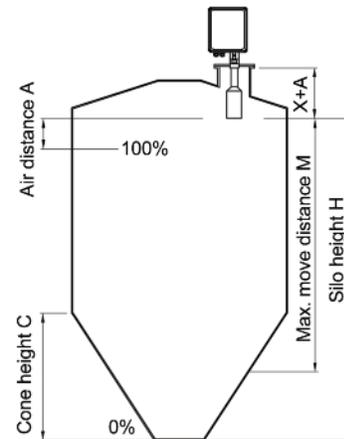
If the unit is working in normal operation (measurement mode), the **SETUP** button brings up the Quickset Menu.



<b>Max. move distance M</b>	Ensures that the weight does not enter into the silo outlet.
<sup>(1)</sup> <b>Silo height H</b>	Definition of 0% level output. Note: If the maximum move distance M is smaller than the silo height H, the measured value will always be more than 0%.
<sup>(1)(2)</sup> <b>Air distance A</b>	Definition of 100% level output.
<sup>(1)</sup> <b>Cone height C</b>	Enables to set the current output as volume. C=0 Current output indicates material level C>0 Current output indicates material volume

<sup>(1)</sup> These values are not relevant if the "Counting pulse output" is used.

<sup>(2)</sup> If needed, the 100% level can be set higher than the level of the sensor weight. See advanced menu item "Inverted air distance".



## PROGRAMMING BUTTONS

 Continues with the next adjustment item.

 Continues with measurement display after parameter adjustment;  
Starts measurement;  
Cancels a failure message (when pressed for 2 sec together with **SETUP** button).

 Increases the value to be adjusted.

 Decreases the value to be adjusted.

## RUNTIME MESSAGES

During measurement mode, the following runtime indications are given:

 Upper Stop Position is reached.

 Motor is moving the sensor weight (fast mode).

 Motor is moving in slow mode (shortly after motor start and before Upper Stop Position is reached).

**Blocked 24-26 open** Measurement interruption is active (terminal 24 to 26 not connected, see page 6).

## FACTORY SETTINGS

To reset all programmed parameters to factory setting (default values), press the buttons ,  and  together for approx. 10 seconds.

## ADVANCED MENU

(Use only if necessary)

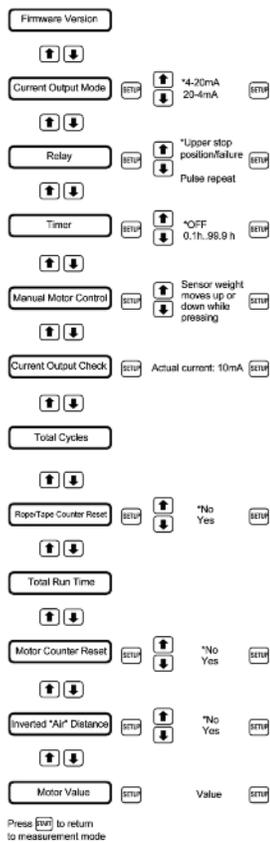
**With the advanced menu, it is possible to set the outputs and to display the actual state of the unit.**

Entering The Advanced Menu

If the unit is working in normal operation (measurement mode), press both

  buttons together for approx. 2 seconds.

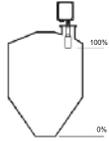
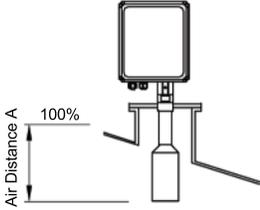
**NOTICE** Pressing the  button in measurement mode brings up more service information (not described in this manual).



The screenshot shows the following menu items and their current values:

- Firmware Version: [Up] [Down]
- Current Output Mode: [Up] [Down] \*4-20mA / 20-4mA [SETUP]
- Relay: [Up] [Down] \*Upper stop position/failure / Pulse repeat [SETUP]
- Timer: [Up] [Down] \*OFF / 0.1h..99.9h [SETUP]
- Manual Motor Control: [Up] [Down] Sensor weight moves up or down while pressing [SETUP]
- Current Output Check: [Up] [Down] Actual current: 10mA [SETUP]
- Total Cycles: [Up] [Down]
- Rope/Tape Counter Reset: [Up] [Down] \*No / Yes [SETUP]
- Total Run Time: [Up] [Down]
- Motor Counter Reset: [Up] [Down] \*No / Yes [SETUP]
- Inverted "Air" Distance: [Up] [Down] \*No / Yes [SETUP]
- Motor Value: [Up] [Down] Value [SETUP]

Press **START** to return to measurement mode

<b>Firmware version</b>	States the firmware version of the unit.												
<b>Current output mode</b>	 <table border="1" data-bbox="586 159 889 254"> <thead> <tr> <th>Setting</th> <th colspan="2">Current Output At Level</th> </tr> </thead> <tbody> <tr> <td></td> <td>0%</td> <td>100%</td> </tr> <tr> <td>4-20 mA</td> <td>4 mA</td> <td>20 mA</td> </tr> <tr> <td>20-4 mA</td> <td>20 mA</td> <td>4 mA</td> </tr> </tbody> </table>	Setting	Current Output At Level			0%	100%	4-20 mA	4 mA	20 mA	20-4 mA	20 mA	4 mA
Setting	Current Output At Level												
	0%	100%											
4-20 mA	4 mA	20 mA											
20-4 mA	20 mA	4 mA											
<b>Current at Failure</b>	In case of failure, the current output shows the adjusted value.												
<b>Relay</b>	Select upper stop position/Failure or counting/reset pulse relay output. Details (see Signal Overview on page 6/7).												
<b>Timer</b>	Automatic start of measurement with timer function. The timing interval between two measurements can be adjusted between 0.1 hour (6 minutes) and 99.9 hours. Position "off" causes no automatic measurement start. The timer will be reset after finishing a measurement or after connecting the terminals 24 and 26 (measurement interruption). If the timer is set, a measurement will start immediately after power on. For automatic measurement at a predetermined time of day, an external start unit connected to terminals 24/25/27 is necessary. To avoid needless wear and tear, the unit should not be started more often than necessary.												
<b>Manual motor control</b>	The motor moves the sensor weight upwards while the  button is being pushed. The motor moves the sensor weight downwards while the  button is being pushed.  <b>Note:</b> If the sensor weight is in the upper stop position or touching the bulk material surface or after the max. move distance, the motor is automatically stopped.  <b>CAUTION:</b> Avoid the sensor weight reaching the outlet position of the silo.												
<b>Current output check</b>	Enables to check if the current output is working properly. The current output is forced to 10 mA. This can be evaluated by an external connected multimeter.												
<b>Total cycles</b>	Indicates how many measurement cycles have been performed up to now.												
<b>Rope/Tape counter reset</b>	Can be done after a tape change if the service interval message F16 was not yet present. It sets the internal counter to zero to have the full amount of measurement cycles until the next service interval message will appear.  <b>Note:</b> After a F16 message is reset with the  button, the tape counter is automatically set to zero.												
<b>Total run time</b>	Indicates how long the motor has been running up to now (in hours).												
<b>Motor counter reset</b>	Can be done after a motor change if the service interval message F17 was not yet present. It sets the internal counter to zero to have the full amount of motor run time until the next service interval message will appear.  <b>Note:</b> After a F17 message is reset with the  button, the motor counter is automatically set to zero.												
<b>Inverted "Air Distance"</b>	Enables to set the 100% reference of the 4 to 20 mA output to a level which is over the level of the sensor weight.  To do this the value must be set to "Yes". The "Air distance A", which is adjusted in the Quickset Menu (see page 8), is now over the level of the sensor weight. The display in the Quickset Menu indicates this with a minus as follows: Air distance: -1.5 m.  <b>Note:</b> In this case the output will never reach 100%.  												
<b>Motor value</b>	Internal value only to be used in case of replacement of the motor.												

## ROPE/TAPE LIFETIME

The expected lifetime for the rope/tape is approx. 250.000 cycles.

### NOTICE

This value refers to lifetime tests under the following conditions:

- No excessive material influence.
- The sensor weight meets an inclined surface so to cause an oscillating movement of the sensor weight during upwards movement.

The failure message is displayed 90% of the expected lifetime to ensure some safety. For further information, see message F16.

See figure on right hand for the operating time depending on the measurement cycles per day.

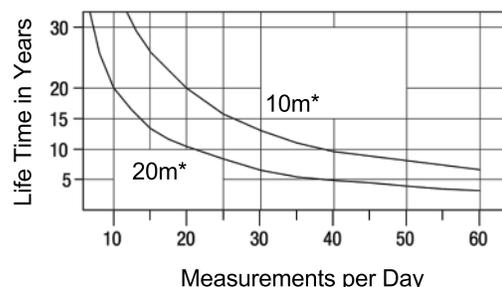
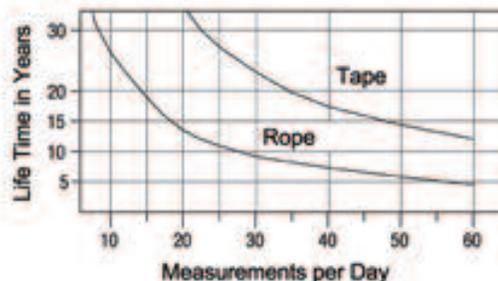
For applications with adverse conditions it is recommended to change the tape more frequently.

## MOTOR LIFETIME

The expected lifetime (run time) for the motor is approx. 3500 hours.

The failure message is displayed at 90% of the expected lifetime to ensure some safety. For further informations see message F17.

See figure on right hand for the operating time depending on the measurement cycles per day.



\*average measurement distance

## DIAGNOSTICS

### Failure:

Result is an invalid measurement.

Red LED is on. Relay 2 indicates failure (if selected).

The signal indicates critical situations. Evaluating the signal can help to avoid losing the sensor weight inside the silo. If failure is indicated, the unit must be checked on site.

Failure Code	Description	Indication	Performance of the Device	Solution
F10	Motor or motor-driver-electronic defect	Motor does not rotate when it is actuated.	If possible, the sensor weight will be moved up to the "Upper stop position".	Check motor connection. Motor or electronic change.
F11	Sensor weight is buried or jammed	Difference of distance between down and up movement too big.	Motor moves 4 seconds upwards, then waits 10 seconds. After that, the motor moves shortly downwards and then upwards again. If the sensor weight is still jammed, this cycle is repeated 5 times. After that the cycle goes on with a delay time of one hour.	Release the sensor weight. Make sure the sensor weight can move freely.
F12	Tape broken	Motor is running but the upper stop position is not reached.	Motor moves upwards. If after a certain time the upper stop position is not reached, the motor stops.	Repair of tape break. Check if tape maintenance was properly done. Check possibility of buried sensor weight.
F15	Not enough current available from DC power supply (DC model only)	Supply voltage drops during function.	Sensor weight is moved to the upper stop position.	Enable enough supply current according to the technical data specification.
F16	Service interval: tape	The amount of measurement cycles are 90% of the tape lifetime.	The measurement cannot be restarted.	Change tape roller (do not cut the tape*).
F17	Service interval: motor	The actual run time is 90% of the motor lifetime.	The measurement cannot be restarted.	Change motor.

By pushing the **START** and **SETUP** button together for 2 seconds, the failure message shown on the display can be reset.

\*Cutting of the tape shall not be done. This leads to an inaccurate measurement result, because it changes the diameter of the tape roller and therefore leads to a different length related to the number of turns of the tape roller.

**CAUTION** Resetting F16 or F17 without changing the tape/meter may cause material damage. Before replacing the tape roller, remove the unit from the silo to avoid losing the sensor weight inside the silo.

### Maintenance:

Red LED is blinking.

The following message is indicated on the display, but will NOT lead to a failure state and is not indicated by the failure relay or the 4 to 20 mA output:

Code	Description	Performance of the Device	Solution
M11	Sensor weight blocked in "Upper stop position", min. moving distance of sensor weight to short, or tape is tangled.	The unit tries to start 5 times. If the sensor weight is not released during this time, the message is shown. If after a new measurement start the sensor weight is released, the message will automatically disappear.	Ensure min. moving distance is > 7.87" (200 mm). Replace tape roller.

### SAFETY NOTES:

#### NOTICE

- Installation, maintenance, and commissioning must be carried out only by qualified technical personnel.
- The product must be used only in the manner outlined in this instruction manual.

### MAINTENANCE/REPAIR

Upon final installation of the Series DBOB, no routine maintenance is required. The Series DBOB is not field serviceable and should be returned if repair is needed. Field repair should not be attempted and may void warranty.

### WARRANTY/RETURN

Refer to "Terms and Conditions of Sales" in our catalog and on our website. Contact customer service to receive a Return Goods Authorization number before shipping the product back for repair. Be sure to include a brief description of the problem plus any additional application notes.