

# The Insider

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...because it's what's inside that counts

## The A-Maizing 3DLevelScanner™ Measures Corn in Grain, Food & Ethanol

When BinMaster first introduced the 3DLevelScanner early in 2009, about half the inquiries regarding the revolutionary technology were from grain and ethanol operations handling large volumes



*Dust penetrating, non-contact device is easy to install.*

of corn. Many discussions centered around frustration with devices that were not working properly, measurements being unreliable or inaccurate and in some cases – the device simply refused to measure at all. Cables from guided wave radar devices were being broken and equipment was getting buried, causing an interruption of operations and need for repairs. Operators using non-contact radar and ultrasonic technologies reported incidences of the devices failing to take accurate measurements or simply locking up when dust levels were very high.



Several of BinMaster's early installations of the 3DLevelScanner were in corn bins used in ethanol, grain storage and food processing operations. A Midwest ethanol plant was frustrated with its guided wave radar. Undeniably dusty during filling, the operation was challenged with broken cables on the device used in a 150'-tall bin. A very large grain storage operation with hundreds of bins wasn't getting reliable readings from an ultrasonic device. A food processing operation needed to keep close tabs on bin volume, so they would not get full and interrupt operations until they were emptied.

### What's Inside



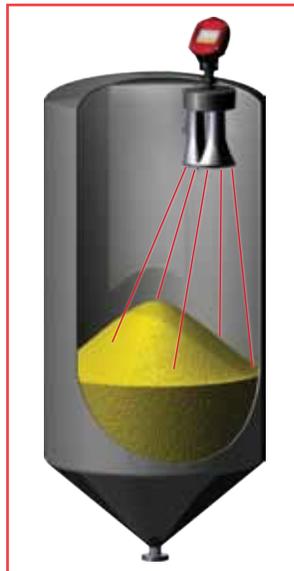
**Bin Level Basics: Simple, Reliable & Inexpensive**  
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## **BINMASTER**

PO Box 29709  
Lincoln, NE 68529  
800.278.4241  
402.434.9101  
402.434.9133 FAX  
[www.binmaster.com](http://www.binmaster.com)



*Multiple point measurement ensures greater accuracy.*

Intrigued? Frustrated? "There is no one technology that will address every level measurement challenge ... 3DLevel Scanner included," states Todd Peterson, BinMaster's Vice President of Sales. "But, we have found that 3D can provide a solution where radar and ultrasonic devices have failed to work. It's critical for us to understand what the customer is trying to achieve and to determine realistically if 3D can help them."

To understand if an operation is suited for 3DLevelScanner, BinMaster needs to get "bin-timate". Knowing every last detail about the bin and how it is used is critical. Each potential location is required to fill out a highly detailed application worksheet. After careful review, BinMaster will either recommend to move forward or decline the installation. BinMaster stands behind the 3DLevelScanner with a Performance Guarantee, plus will remotely monitor each location during the first 30-days of installation to fine tune settings for optimal performance.

# Bin Level Basics: Simple, Reliable & Inexpensive

There are many types of highly advanced bin level technologies offered today. Some – like BinMaster’s 3DLevelScanner and SmartBob systems – feature comprehensive inventory management solutions. However, often the need is to simply know when a bin is either empty or full. Overfilling bins wastes time and costs money. Climbing bins to peek in isn’t likely on anyone’s bucket list. And who isn’t concerned about safety today? A single claim due to an injury caused by a fall will easily cost a company thousands of dollars as well as complicate operations with volumes of paperwork and tedious meetings and inspections. Why climb when technologies like diaphragm switches and rotary point level controls are easy to install, simple to operate and very affordable?

## Diaphragm Switches Work Under Pressure

The diaphragm switch is among the most basic point level devices. Its operating principle is quite simple. As the bin is filled, material comes into contact with the switch causing contact to be made, activating a light or horn to alert that the bin is full. Most often used for high level indication, the diaphragm switch is mounted either inside or outside of the bin. External mounts require a hole to be cut in the bin. Internal mounts are mounted inside of the bin and require no cutting of the bin wall. If desired, diaphragm switches can be mounted intermittently on the side of a bin to alert to low, medium or high levels.

BinMaster’s BM-45 models are for general use in non-hazardous environments. Priced at about \$125, there are a variety of BM-45 configurations offering internal or external mounting with either neoprene or silicon diaphragm covers. Heavy duty models with a DPDT (double-pole, double throw) switch cost about \$250. The BM-65 model is designed for hazardous environments and comes in similar configurations, such as internal or external mounting and neoprene or silicone diaphragms at a cost of about \$180.

The diaphragm switch or any other point level device can be wired to BinMaster’s point level alarm panel, which activates a light when contact is made as the bin is filled. Alarm panels are

available in configurations of 4, 8, 12, 16, 20 or 24 stations. When contacting BinMaster, a professional consultant will help configure the equipment you need. BinMaster also sells accessories such as junction boxes and horns that can be added to an alert system using point level indicators.

## Bin There, Done That

Rotary level indicators are the most widely used devices for point level detection and for good reason – they are suitable for just about any bulk sold material. Rotaries are ideal as a high level control, working by rotating continually when no material is present. When material reaches the level of the paddle, resistance on the paddle prevents it from rotating. When the paddle stops, a signal is sent to an alarm panel or horn, indicating the bin is full. In addition to high and low level indication, rotaries can be used in hoppers, tanks and conveyors for process monitoring by alerting to clogged conditions. BinMaster adds to the versatility of the rotary level indicator by offering a wide variety of configurations – plus numerous paddles and extensions – which are customized and built-to-order in BinMaster’s 75,000 square foot facility in Lincoln, Nebraska, USA.

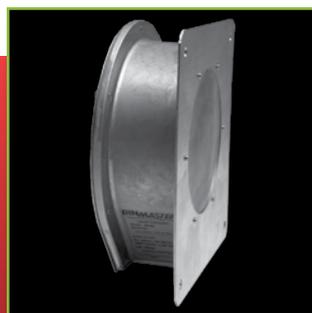
## BMRX for Basic, Maxima+ for More Rotary Features

Starting at about \$200 for the base unit, the BMRX is BinMaster’s most popular rotary level indicator, featuring a basic reliable and rugged design that provides for simple, dependable operation. It is rated for hazardous locations where Class I, Groups C and D, or Class II, E, F, and G listings are required. The feature-rich Maxima+ also offers a “fail-safe” feature that sends an alert when power has been disrupted to the unit, preventing unwanted overfills and eliminating the need to manually inspect the power supply to the unit. An LED light on the top of the unit indicates either a covered or fault condition, alerting the operator of unexpected unit failure or power loss.

*Point Level Alarm Panel*



*Diaphragm Switch*



*Protective bearing prevents material from packing between rotary shaft and shaft guard.*



## BinMaster Means Longer Motor Life

Always responsive to customer needs, BinMaster's in-house engineers have designed many important features into both the



BMRX and Maxima+ rotaries. Most notable is "de-energized" operation of the motor. While most competitive rotaries put the motor into a stalled condition when rotation is stopped by material, BinMaster's "de-energized" operation shuts the motor down when material is present. This reduces stress on the internal components, prolongs motor life, and reduces power consumption. This increases the longevity of the unit, reduces the need for service, and saves money on repair, replacement and operational costs. In the unlikely event that service is needed, a screw-top enclosure opens quickly and easily for access to components.

## Put the Paddle to the Metal

For providing reliable performance in controlling dry bulk material storage and flow in bins, hoppers, tanks, chutes and conveyors, BinMaster offers more than a dozen different paddles designed for a wide variety of industries and applications. Three-vane paddles of stainless steel or polyethylene come in both 5" and 7" diameters and are suitable for light to medium weight materials ranging from 30 to 70 pounds per square foot. Bayonet-style paddles that easily insert into standard openings are often used in medium to heavy weight materials. Both three-vane and bayonet-style paddles are available with a direct-connect fitting, eliminating the need for a coupler. Insertable, collapsible one and two-vane paddles are ideal for standard 1-1/4" openings, avoiding the need to cut holes in bin walls. A belt-style paddle is suitable for heavy material of large particle size.

## "No-Packing" Rotary Extensions

With BinMaster, there is no need to worry about material packing into the rotary shaft causing false readings and maintenance headaches. BinMaster's rotary extension design includes a protective bearing at the bottom of the shaft that forms a seal between the rotary shaft and the shaft guard. This bearing prevents bin material from getting packed up into the extension and causing the rotary to give a false "full" signal when the paddle stops turning. The rotary extension can be integrated with either the BinMaster Maxima+ or BMRX rotaries.

In its in-house machine shop, BinMaster manufactures each rotary extension of either aluminum or stainless steel. When required, all components that come into contact with material are made of stainless steel, which is often requested for sanitary or food grade operations. The new rotary design also performs well with highly corrosive materials, like fertilizer, that can be very aggressive.

## Take it from the Top ... or Side

The BinMaster rotary extension provides the ability to install a rotary where bin walls, such as those in concrete silos, are up to 8" thick. This extension design allows for rotaries to be side-mounted with minimal risk of damage during operations. Standard lengths of 6", 8", 10", or 12" are available.

Top-of-bin mounting for rotaries is desired when the rotary is used as a high level alarm either alone or in addition to a side-mounted rotary as an extra high level indicator during filling.

Solid material will tend to be higher at the filling point and most operators don't want any bin filled to the very top and need to allow for a specified amount of headroom in the bin. For top-of-bin applications, BinMaster manufactures to the length requested by the customer, offering custom lengths up to 72".

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A FREE CONSULTATION  
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OR EMAIL  
INFO@BINMASTER.COM**

## Calendar

See BinMaster® at these upcoming events.

**GEAPS Exchange 2010**  
**February 20 to 23, 2010**  
**Booth 247A**  
**Wichita Convention Center**  
**Wichita, KS USA**

**PTXi, PBS, Chem Pharm & Pack 2 View**  
**May 4 to 6, 2010**  
**Booth 2243**  
**Donald E. Stephens Convention Center**





Established in 1953, Garner Industries is home to the BinMaster® level control business. Additionally, our state-of-the-art ISO 9001:2000 certified facility in Lincoln, Nebraska USA offers jobshop and precision tooling services for a wide variety of industries including automotive, refining, electronics, aerospace, and telecommunications ... to name but a few. Visit [www.garnerindustries.com](http://www.garnerindustries.com) to find out about our full suite of services.



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**"From simple point level controls to advanced computer-based inventory management, I call BinMaster."**

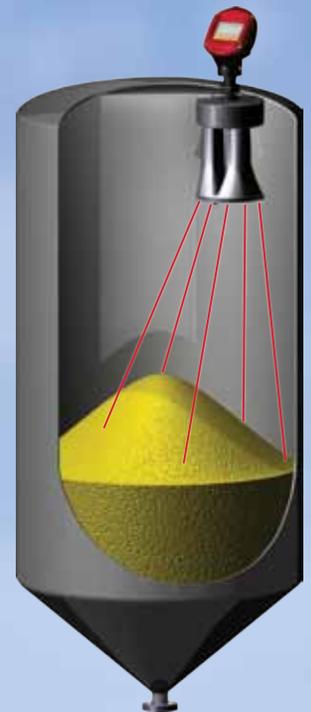


**NEW!**

## 3DLevelScanner Multiple Point Volume Measurement

**PLUS!**

- SmartBob2
- Rotaries
- Diaphragm Switches
- Vibrating Rods
- Capacitance Probes
- Tilt Switches
- Ultrasonics
- Radar
- Aeration
- Dust & Flow Detection



**BINMASTER LEVEL CONTROLS**

800.278.4241 or [info@binmaster.com](mailto:info@binmaster.com)

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