



## **BMRX DC Rotary Level Indicator**



BinMaster: Division of Garner Industries  
7201 N. 98th St., Lincoln, NE 68507  
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**OPERATING INSTRUCTIONS  
PLEASE READ CAREFULLY**

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# SPECIFICATIONS

## BMRX DC GENERAL SPECIFICATIONS

<b>Supply:</b>	12 VDC to 24 VDC
<b>Supply Tolerance:</b>	±10%
<b>Load:</b>	5.5 VA
<b>Ambient Temperature: (Electronics)</b>	-40°F to +185°F (-40°C to +85°C)
<b>Enclosure:</b>	NEMA 4X IP66 Die cast aluminum, FDA recognized powder coat finish
<b>DPDT Relay Output:</b>	10 Amps 250 VAC
<b>Fail-Safe:</b>	Switch selectable “High” or “Low” level modes
<b>Mounting:</b>	1-1/4” NPT
<b>Conduit Entry:</b>	3/4” NPT
<b>Shaft Seal:</b>	1/2 micron, 30 PSI

# SAFETY

## SAFETY SUMMARY

Review the following safety precautions to avoid injury and prevent damage to the equipment.

The product should be installed, commissioned, and maintained by qualified and authorized personnel only.

Install according to installation instructions and comply with all National and Local codes.

Use electrical wire that is sized and rated for the maximum voltage and current of the application.

Properly ground the enclosure to an adequate earth ground.

Observe all terminal and relay contact ratings as called out on the nameplate and in the installation manual.

Ensure that the enclosure cover is in place and secured tightly during normal operation.

In potentially wet environments thoroughly seal all conduit entries.

If this product is used in a manner not specified by the manufacturer, the safety protection could be compromised.

## Safety Terms and Symbols



**WARNING:** Warning statements identify conditions or practices that could result in injury or loss of life. Risk of electrical shock.



**CAUTION:** Caution statements identify conditions or practices that could result in damage to this product or other property.

# INTRODUCTION

## 1.0 INTRODUCTION

The BinMaster BMRX is a rotating paddle style level sensor which provides reliable point level detection for bulk solids, including powders, pellets, and granular materials. The unit has a switch selectable fail-safe relay that will fall to a "safe" condition in the event of a power failure.

The BMRX motor rotates the drive shaft and paddle at 1 RPM. When the vessel material fills to the level of the indicator paddle, the material causes the paddle to stop rotating indicating a covered condition. When the material falls away, the paddle starts rotating again to indicate an uncovered condition.

## 2.0 INSTALLATION

### 2.1 Location and Mounting

#### TOP MOUNT

(For mounting plate options see Figure 4 on page 6)

1. Locate and cut hole in top of bin to fit outside diameter of 1-1/4" pipe coupling (1.950").
2. Position coupling halfway into bin and weld.
3. Turn unit so conduit opening is in desired location.
4. Add 1/4" extension pipe to desired length with standard 1/4" coupling on bottom end.
5. Cut 1-1/4" support pipe approximately 4" shorter than overall length of 1/4" pipe shaft when used with flexible coupling.
6. Insert 1-1/4" pipe into coupling and tighten.
7. Insert paddle into 1/4" coupling and drill holes for lock pins.

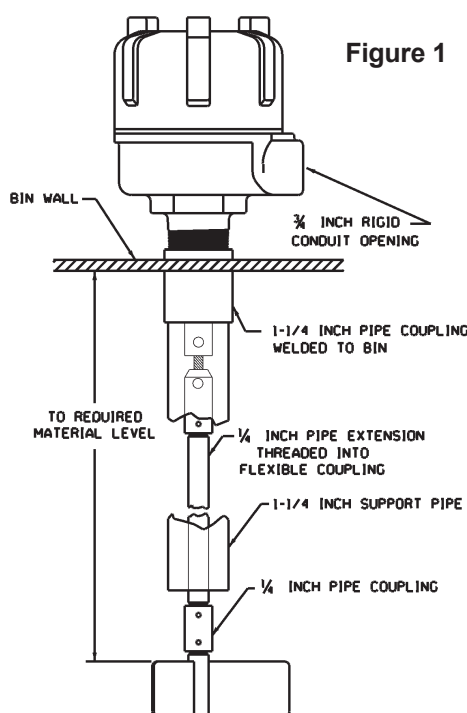


Figure 1

#### SIDE MOUNT

(For mounting plate options see Figure 5 on page 6)

1. Locate and cut hole in side of bin to fit outside diameter of 1-1/4" pipe coupling.
2. Weld on half of standard 1-1/4" pipe coupling to bin wall flush with inside of bin.
3. Insert hub into coupling and turn until conduit opening is in blown position.
4. Screw paddle into place and replace lock pin.
5. Shaft and paddle should be shielded in low level mounting when subjected to material flow.
6. For side mount, a solid coupler is recommended.

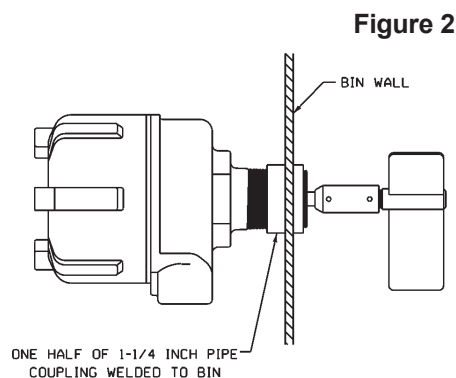


Figure 2

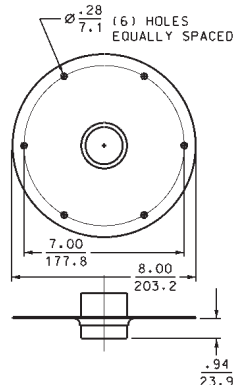
## MOUNTING PLATES

Mounting plates are necessary when a completely assembled unit is to be mounted on the bin wall from the outside. A 5-1/2" hole is cut in the bin. Six bolt holes are drilled around the hole to match the mounting plate. The plate, with the unit attached, is then bolted in place. All mounting plates are available in carbon and stainless steel.

### Full Coupling

For use with all rotary level controls. This model is used for top of bin installations where shaft extensions and shaft guards are required.

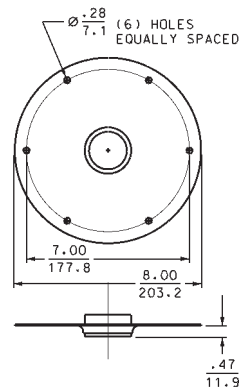
Figure 4



### Half Coupling

For use with all rotary level controls. This model is used primarily for side of bin installations.

Figure 5



## BMRX DC Wiring

### 2.2 Input Power and Field Wiring

**!** The BMRX DC can be powered from 12 VDC to 24 VDC supply voltages. Field wiring should conform to all national and local electrical codes and any other agency or authority having jurisdiction over the installation. For power input, use wire that is sized and rated for the maximum voltage and current as per equipment ratings and has a temperature rating of at least 80°C. For relay outputs, use wire that is sized and rated for the maximum voltage and current as per application, up to 250 VAC 10A, and has a temperature rating of at least 80°C. Installation shall be done by qualified personnel.

**!** **Input Power**  
Power input to the BMRX DC is connected to the DC input + and - terminals.

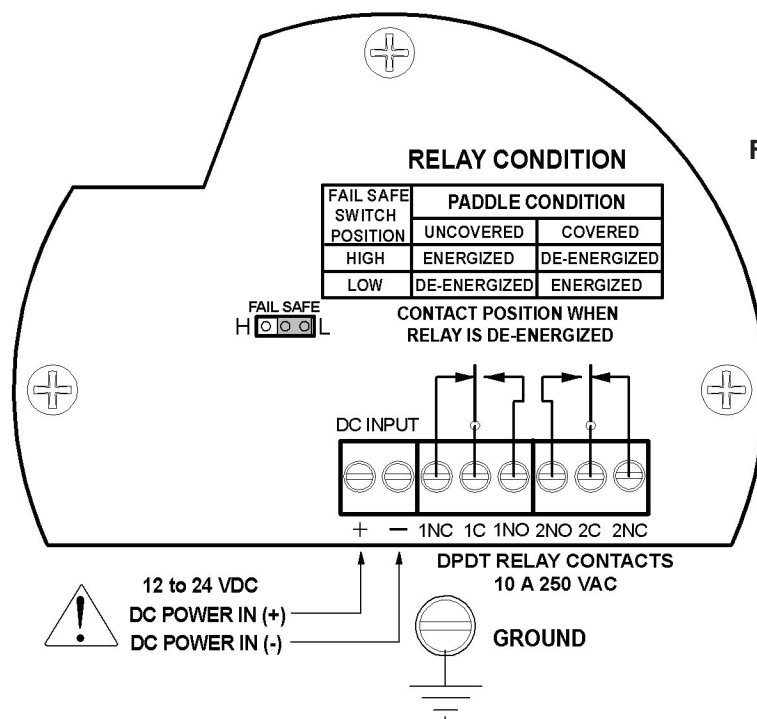


Figure 6

## 2.3 Grounding



An equipment grounding connection (earth ground) must be supplied to the unit for safety. Connect the ground conductor to the green equipment grounding screw identified in the enclosure.

## 3.0 DPDT RELAY

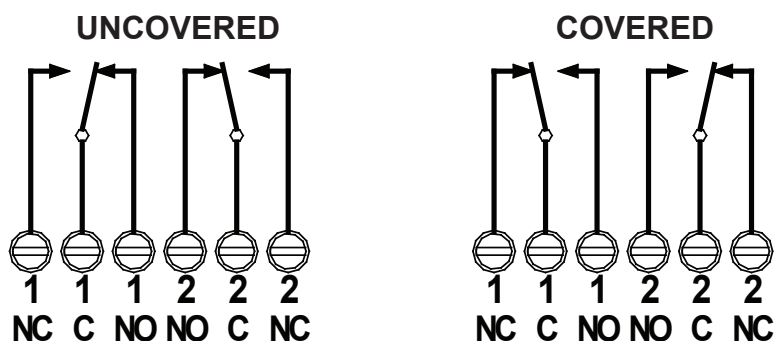
The DPDT relay utilizes a Fail-Safe selector jumper. There are 2 positions for this jumper, High (H) and Low (L). A Fail-Safe condition means that the DPDT relay contact positions are set up so that in the event of a power failure the relay will be de-energized and the contacts will indicate a condition that is deemed safe for the application.

### 3.1 Fail-Safe High

Fail-Safe High means that the relay will be energized when the paddle is rotating (uncovered) and will de-energize when the probe is covered. In this mode, a power failure will cause the relay contacts to indicate that the paddle is covered, whether it is or not.

Figure 7

#### FAIL-SAFE "HIGH" RELAY CONTACT POSITION

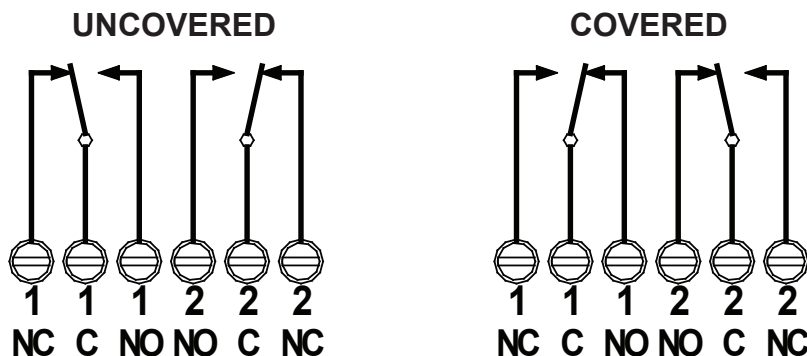


### 3.2 Fail-Safe Low

Fail-Safe Low means that the relay will be de-energized when the paddle is rotating (uncovered) and will energize when the paddle is covered. In this mode, a power failure will cause the relay contacts to indicate that the paddle is uncovered whether it is or not.

Figure 8

#### FAIL-SAFE "LOW" RELAY CONTACT POSITION



## 4.0 WARRANTY AND CUSTOMER SERVICE

### 4.1 Limited Warranty

The manufacturer warrants this equipment for two (2) years according to the following terms:

1. This warranty extends to the original purchaser only and commences on the date of original purchase.
2. The manufacturer will repair or replace any part of this equipment found to be defective, provided such part is delivered prepaid, to the factory. Manufacturer's obligation is limited to the cost of material and labor to repair or replace and does not include transportation expenses.
3. This warranty shall not apply to any product that has, in our judgment, been tampered with, altered, subject to misuse, neglect or accident. In addition, the warranty does not extend to repairs made necessary by normal wear.
4. This warranty is in lieu of all other warranties, expressed or implied.

### 4.2 Customer Service

BinMaster offers a toll-free Customer Service phone number **1-800-278-4241**. You may call the Customer Service Department for technical and application assistance Monday through Friday from 8:00 AM to 5:00 PM Central Time. International customers call us at **(402) 434-9102** or reach us via fax at **(402) 434-9133**. BinMaster can also be emailed at [support@binmaster.com](mailto:support@binmaster.com).

## 5.0 DISPOSAL

This product consists of materials that can be recycled by specialized recycling companies. It uses recyclable materials and the electronics are designed to be easily separated. Consult local authorities for proper disposal locations.



# Declaration of Conformity

BinMaster Level Controls  
7201 North 98th Street  
Lincoln, NE 68507-9741  
Phone: 402-434-9102, Fax: 402-434-9133

BinMaster declares that all models of the BMRX level control devices as listed below comply with the following directives and harmonized standards. This product if installed, operated and maintained as described in this manual will provide a safe and reliable point level control device for bulk solid materials.

Low Voltage Directive 2006/95/EC  
Standard IEC 61010-1:2001

**Product:** Rotary point level control device  
**Models:** BMRX DC

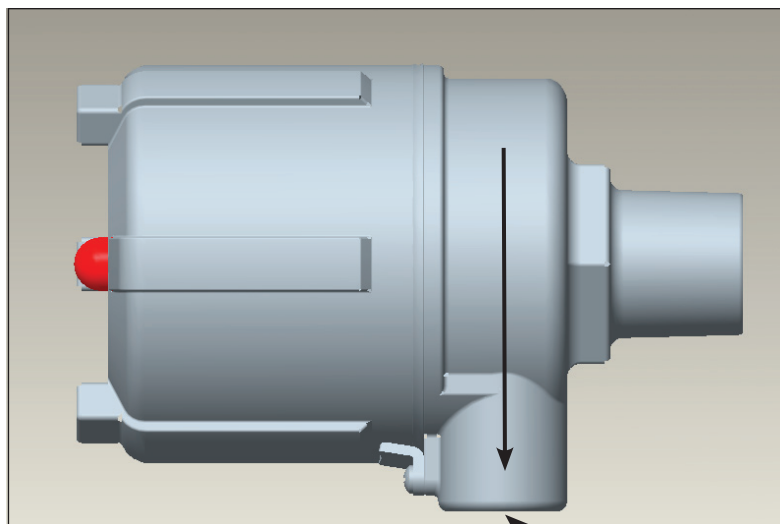
All test reports and documentation are held and can be obtained from BinMaster.

**Manufacturing Location:** Lincoln, Nebraska, USA

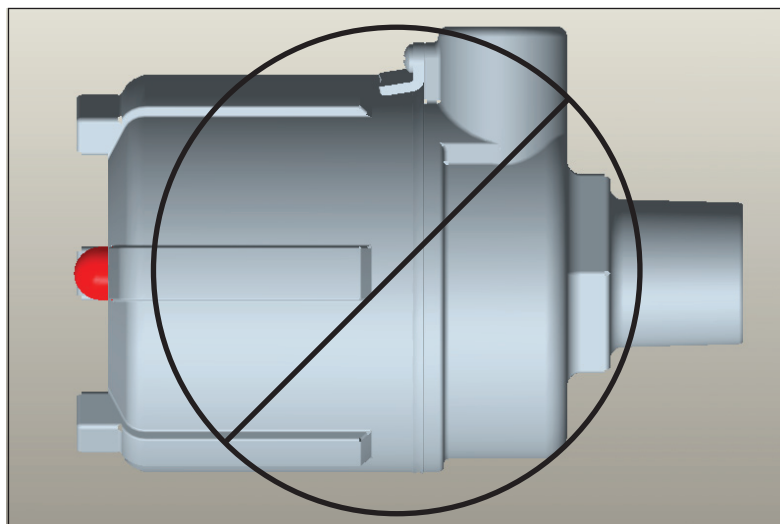


Scott McLain  
President  
3/25/2008

# Mounting Instructions



Always mount unit with  
conduit opening down



## Conduit Seal

When installing this level indicator in environments where it is possible for moisture or moist air to enter the enclosure through the electrical conduit, the conduit opening should be sealed with a duct seal compound or putty appropriate for the purpose.

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