



**BMRX Series  
ROTARY LEVEL CONTROL**



**OPERATING INSTRUCTIONS  
PLEASE READ CAREFULLY**

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## BMRX GENERAL SPECIFICATIONS

**Supply:**            **AC MODELS**            24 VAC, 115 VAC, or 230 VAC 50/60 Hz  
                         **DC MODELS**            12 VDC to 24 VDC

**Supply Tolerance:**            -15% +10%

**Load:**                            AC Model = 5.5 VA; DC Models = 1 VA



**External over current protection:**    10A max.

**Ambient Temperature: (Electronics)**    -40°F to +158°F (-40°C to +70°C)  
   **ATEX:**                            -4°F to +185°F (-20°C to +85°C)

**Enclosure:**                            Type 4X, 5, & 12; IP66  
   Die cast Aluminum with 6% magnesium max  
   USDA approved powder coat finish

**Pressure:**                            5 PSI above ambient

**Altitude:**                            Up to 2000 m

**Hazardous Location Rating:**            CSA / C-USA Class I Group C & D / Class II Group E, F, & G  
   ATEX Suitable for: II 2G 1/2D c  
   Ex d IIB T4 Gb  
   Ex tb IIIC T130°C Db (Ta = -20°C to +85°C)

**DPDT Relay Output:**                    10 Amps 250 VAC

**Fail-Safe:**                            Switch selectable "High" or "Low" level modes.

**Mounting:**                            1 1/4 inch NPT thread



**Conduit Entries:**                    3/4 inch NPT thread    NOTE: For hazardous locations an appropriate conduit seal off as per the installation class or zone is required within 18" of the enclosure.



**Shaft Seal:**                            1/2 micron, 30 PSI    NOTE: The fluorocarbon seal is extremely durable and typical lifespan in normal operation is 8 to 10 years, but should be inspected every three years for wear and replaced as necessary. See Customer Service section for factory contact details.

## SAFETY SUMMARY

Review the following safety precautions to avoid injury, prevent damage to the equipment and maintain protection methods for hazardous locations.

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 electrical codes.

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

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

An external overcurrent protection device or switch must be included in the installation and rated for the voltage and current of the device and load. It should be installed near the equipment and identified as for that equipment. Do not install this product in a manner which makes it difficult to operate the disconnecting device.

Properly ground the enclosure to an adequate earth ground. Observe all switch contact ratings as called out on the nameplate and in the operating instructions. Insure that the enclosure cover is in place and secured tightly after installation.

Before servicing, disconnect power from all circuits entering enclosure before removing cover. After any inspection or servicing, insure the enclosure cover is in place and tightly secured.

In potentially wet environments thoroughly seal all conduit entries.

## Safety Terms and Symbols



**WARNING:** Warning statements identify conditions or practices that could result in injury or loss of life and the *operating instructions must be consulted*. Risk of electrical shock.



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

## Safety Precaution



**CAUTION:** Before removing the enclosure cover, open all circuits entering the enclosure. Be aware that there may be more than one live circuit.

## 1.0 INTRODUCTION

The Bin-Master BMRX is a rotating paddle style level sensor which provides reliable point level detection for bulk solids, including powder, pellet, 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.

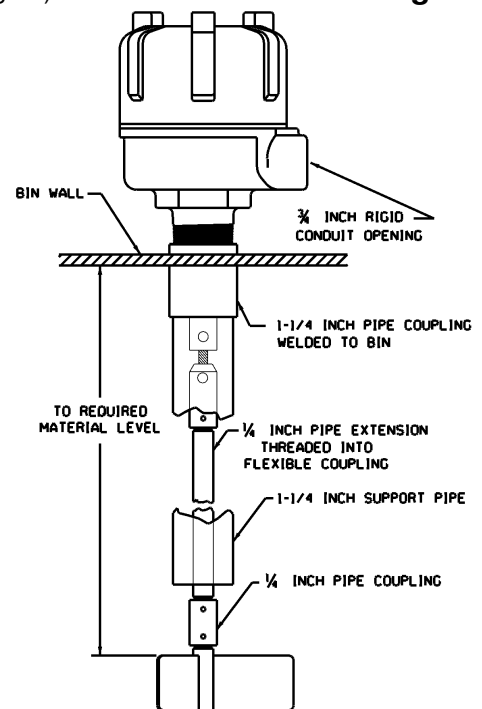
The BMRX motor rotates the drive shaft and paddle at 1 RPM. When the vessel material fills to the level of the indicator paddle, the material causes the paddle to stop rotating indicating a covered condition. When the material falls away, the paddle starts rotating again to indicate an uncovered condition.

## 2.0 INSTALLATION

### 2.1 Location and Mounting

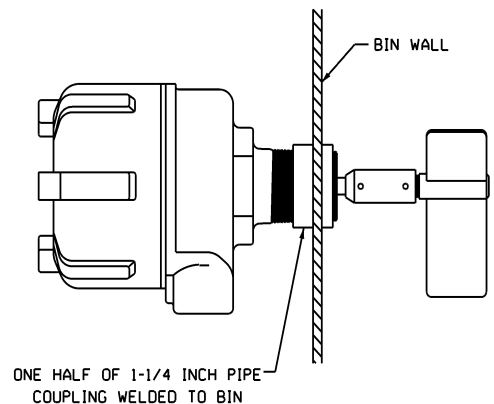
#### TOP MOUNT (For mounting plate options see figure 4 on page 6)

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.



#### 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 to desired conduit 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.



## 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.

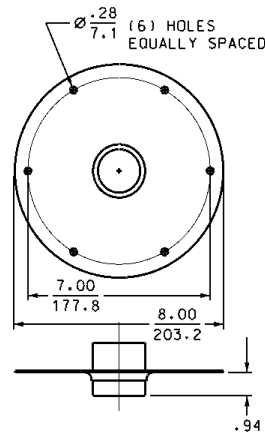


Figure 4

### Half Coupling

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

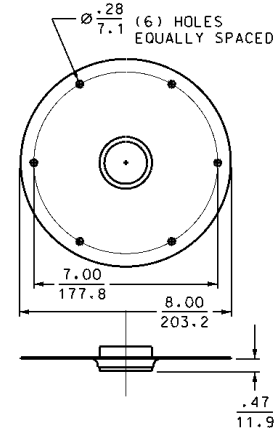


Figure 5

## 2.2 Input Power and Field Wiring

The BMRX is available in AC and a DC Model. The AC Models are available to be powered from 24VAC, 115 VAC, or 230 VAC 50/60 Hz supply voltages. The DC Models are to be powered from 12 VDC to 24 VDC supply voltages. See the voltage rating on the nameplate for the appropriate supply voltage. 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 90°C and suitable for 25°C above the surrounding ambient temperature. For relay output, use wire that is sized and rated for the maximum voltage and current as per application, up to 250VAC 10A, and has a temperature rating of at least 90°C and suitable for 25°C above the surrounding ambient temperature. Installation shall be done by qualified personnel.

### BMRX Wiring

Figure 6

#### Input Power

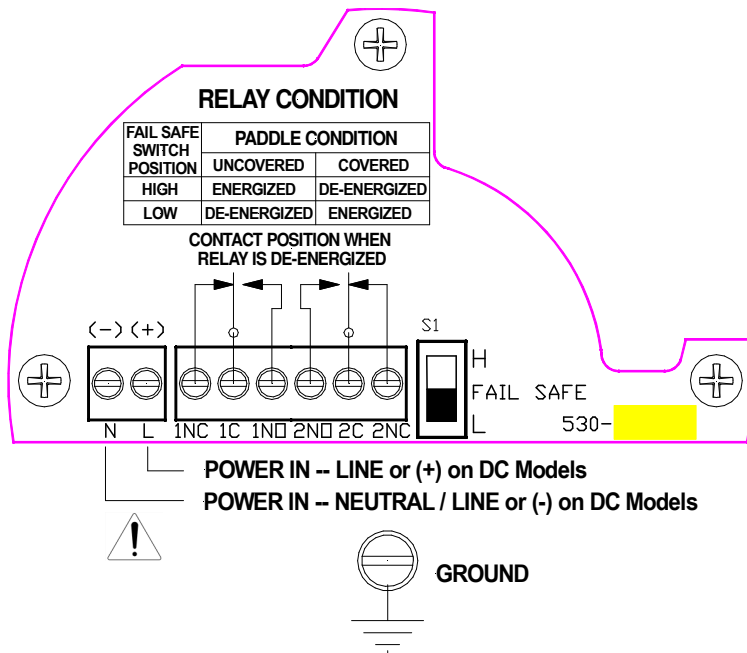
Power input to the BMRX is connected to the LINE terminals labelled L and N.

#### AC Models

On AC models if one of the conductors is grounded, it should be connected to the N terminals. The ungrounded conductor should be connected to the L terminal. If neither conductor is grounded then one of them is connect to the N terminal and the other to the L terminal.

#### DC Models

On DC models the negative conductor should be connected to the N terminal and the positive conductor should be connected to the L terminal.



## 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.

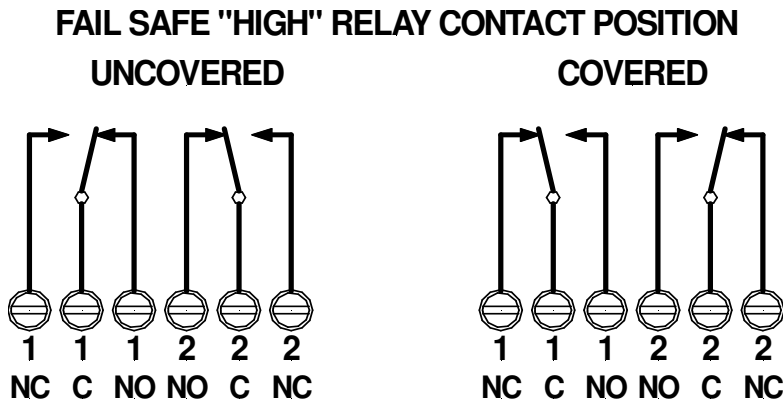
## 3.0 DPDT RELAY

The DPDT relay utilizes a Fail Safe selector switch. There are 2 positions for this switch, 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.

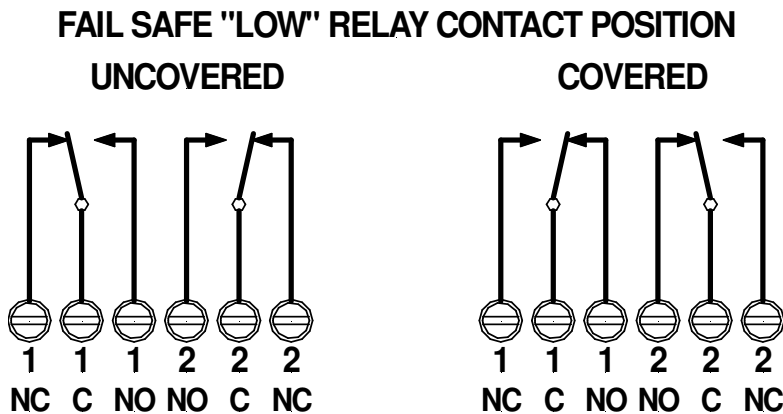
Figure 7



### 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



## **4.0 WARRANTY AND CUSTOMER SERVICE**

### **4.1 Limited Warranty**

BinMaster warrants this product against defects in material and workmanship 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.) BinMaster's sole obligation under said warranty is to repair, or at its option replace the defective parts. The buyer shall have no other remedy. All special, incidental and consequential damages are excluded. The buyer must deliver the product under warranty prepaid to the factory. BinMaster'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 be voided, in our sole judgement, by alterations of equipment except by BinMaster, or tampering with, improper installation or maintenance, accident or misuse, or act of God. This warranty expressly excludes all damage to the product resulting from careless or neglectful packaging or transportation. This warranty does not extend to repairs made necessary by normal wear.
- 4.) This warranty is in lieu of all other warranties, expressed or implied including any implied warranties or merchantability or fitness for particular purpose. No employee, agent franchise dealer or other person is authorized to give any warranties of nature on behalf of BinMaster.
- 5.) BinMaster shall in no event be responsible for any warranty work done without first obtaining BinMaster's written consent.
- 6.) Except as provided herein, BinMaster shall have no liability, loss or damage caused or alleged to be caused directly or indirectly by this equipment.
- 7.) This warranty gives the buyer specific legal rights, and you may also have other rights which vary from state to state.
- 8.) For service, please call 402 434 9102.

### **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, application and service assistance Monday through Friday from 8:00AM to 5:00 PM Central Time. International customers call us at **(402) 434-9102** or reach us via **fax** at **(402) 434-9133**.

### **5.0 Disposal**

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

### **6.0 Repair**

This product contains no user serviceable parts. For repair please consult factory.



# Declaration of Conformity

BinMaster Level Controls  
A Division of Garner Industries  
7201 North 98th Street  
Lincoln, NE 68507-9741  
Phone: 402-434-9100, Fax: 402-434-9133

BinMaster declares under our sole responsibility that all models of the BMRX level control devices 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.

**Product:** Rotary point level control device

**Models:** BMRX AC Models 24VAC, 115VAC, and 230VAC; DC Models 12VDC to 24VDC

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

## ATEX Directive 94/9/EC



II 2G 1/2D c Ex d IIB T4 Ex Gb Ex tb IIIC T130°C Db (Ta = -20°C to +85°C)

## EC-type examination certificate:

Sira 09ATEX1213X

## Notified Body for EC-type examination certificate:

Sira 0518 Chester UK

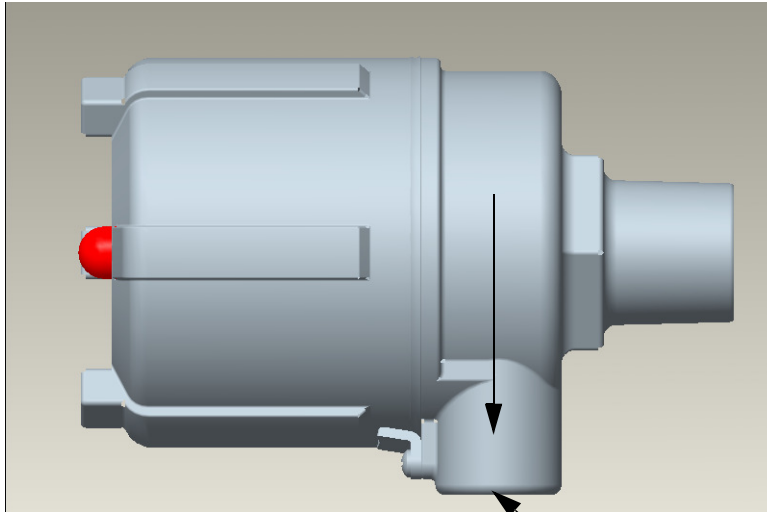
## Harmonised standards used:

EN 60079-0:2012  
EN 60079-1:2007  
EN 60079-31:2014  
EN 13463-1:2009  
EN 13463-5:2011

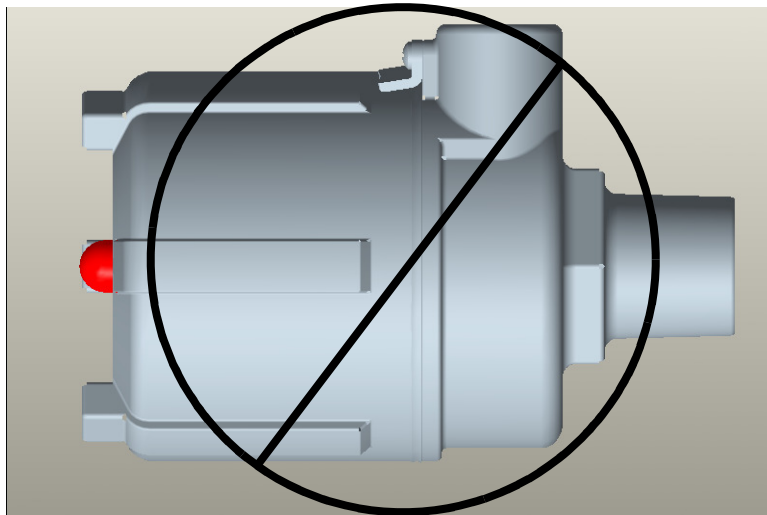
All test reports and documentation are held and can be obtained from BinMaster.

President  
9/15/2015

# Mounting Instructions



Always Mount Unit With  
Conduit opening down



## Conduit Seal

For hazardous locations an appropriate conduit seal off as per the installation class or zone is required within 18" of the enclosure.

***BINMASTER***<sup>®</sup>