



# **BMRX-100**

## **Rotary Level Indicator**

OPERATING INSTRUCTIONS  
PLEASE READ CAREFULLY


BinMaster: Division of Garner Industries  
Lincoln, NE  
402-434-9102

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# SPECIFICATIONS

## BMRX-100 GENERAL SPECIFICATIONS

Power Supply:	115 VAC 50/60 Hz 230 VAC 50/60Hz 24 VAC 50/60Hz
Supply Tolerance:	-15% to +10%
Load:	4 VA
External Over Current Protection:	10A max.
Ambient Temperature: (Electronics):	-40°F to +131°F (-40°C to +55°C)
Process Temperature:	400°F (204°C)
Enclosure Type:	4X / IP66
Enclosure Material:	Die cast aluminum, powder coat finish
Relay Output:	SPDT contacts; 10 Amps 250 VAC
Approvals:	Hazardous Location Rating C/US Class II Div I Groups E, F & G  ATEX  II 1 D Ex ta h IIIC T135°C Da IECEX Ex ta IIIC T135°C Da Ex h IIIC T135°C Da
Standards:	UL 1203:2013Ed.5+R:16Feb2018 CSA C22.2#25:2017Ed.4 UL 61010-1:2012 CSA C22.2#61010-1-12:2012  Conforms to UL STD 1203 Certified to CSA STD C22.2 #25
Mounting:	1-1/4" NPT
Conduit Entries:	3/4" NPT
Shaft Seal:	1/2 micron, 30 PSI NOTE: The fluorocarbon seal is extremely durable and the typical lifespan in normal operation is 8 to 10 years, but should be inspected every three years for wear and replaced as necessary. Output shaft bearings are NOT field replaceable. If damaged, the instrument should be replaced or repaired by the manufacturer. See Customer Service section for factory contact.



**Intertek**  
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# SAFETY

## SAFETY SUMMARY

Review the safety precautions to avoid injury and prevent damage to equipment. The product should be installed, commissioned, and maintained by qualified, authorized personnel only. If installed per installation manual, routine maintenance is not required.

Install according to instructions. Field wiring should conform to all national and local electrical codes and any other agency or authority having jurisdiction over the installation. Conditions of safe use instructions shall be followed as per the ICEC<sub>x</sub> or ATEX certificates.

Use electrical wire that is sized and rated for the maximum voltage and current of the application. The internal grounding terminal shall be used as the equipment grounding means, and that the external terminal is only a supplemental bonding connection where local authorities permit or require such a connection. For EPL Da ta installations, supply fault current must be 1.5kA maximum.

Observe terminal and relay contact ratings on the nameplate and in the installation manual.






Ensure 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 safety protection could be compromised.

If dissimilar metals are used to mount the level control, the enclosure should be inspected for galvanic action every three years.

All sealing devices including cable glands, blanking elements, thread adapters and stopping plugs are required to be certified to type of protection Ex db or Ex ta as applicable, be suitable for use in an ambient temperature range of -40°C to +85°C, be suitable for use in Group IIB and be suitably sized for the cabling which is carried. Installation shall take into account any applicable special conditions for safe use and all relevant installation requirements of IEC 60079-14. No more than one thread adapter may be used on any entry and a thread adapter may not be used in conjunction with a blanking plug.

### Safety Terms and Symbols

-  **WARNING:** Do not open enclosure when an explosive atmosphere is present
-  **WARNING:** Potential electrostatic charging hazard-see instructions
-  **WARNING:** Equipment flame paths (mounting coupler/output shaft) must not be repaired or modified.
-  **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.

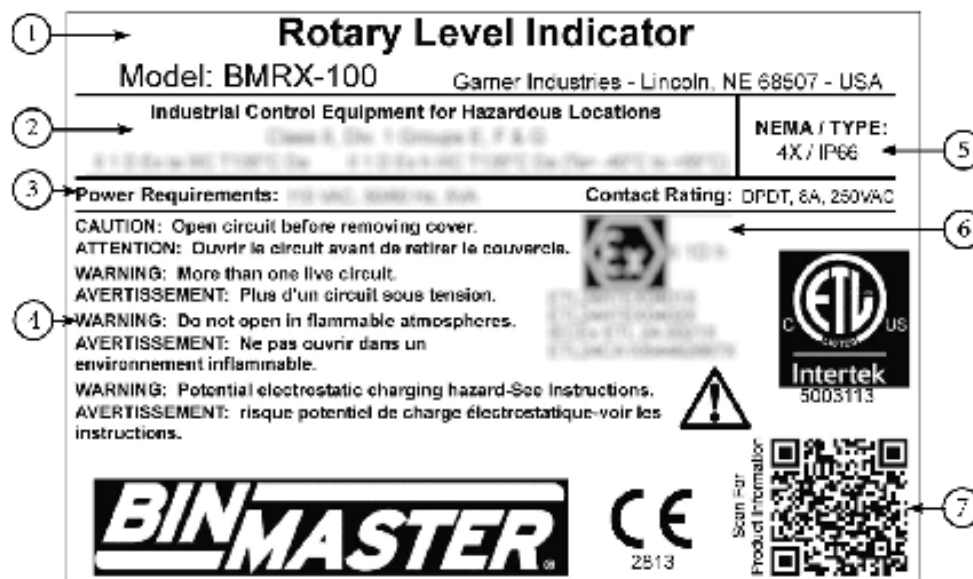
# INTRODUCTION

## 1.0 INTRODUCTION

The BinMaster BMRX-100 is a rotary level sensor that provides reliable point level detection in bulk solids, including powder, pellet, and granular materials.

The BMRX-100 motor rotates the drive shaft and paddle at 1 RPM (0.833 RPM at 50Hz). When the material fills to the level of the indicator paddle, it causes the paddle to stop rotating indicating a covered condition. When the material falls away, the paddle resumes rotating to indicate an uncovered condition.

### Nameplate Label



1. Product Type
2. Approvals
3. Power and Signal Ratings
4. Cautions and Warnings
5. Protection Rating
6. Approval Markings and Certificates
7. QR Code for Product Information

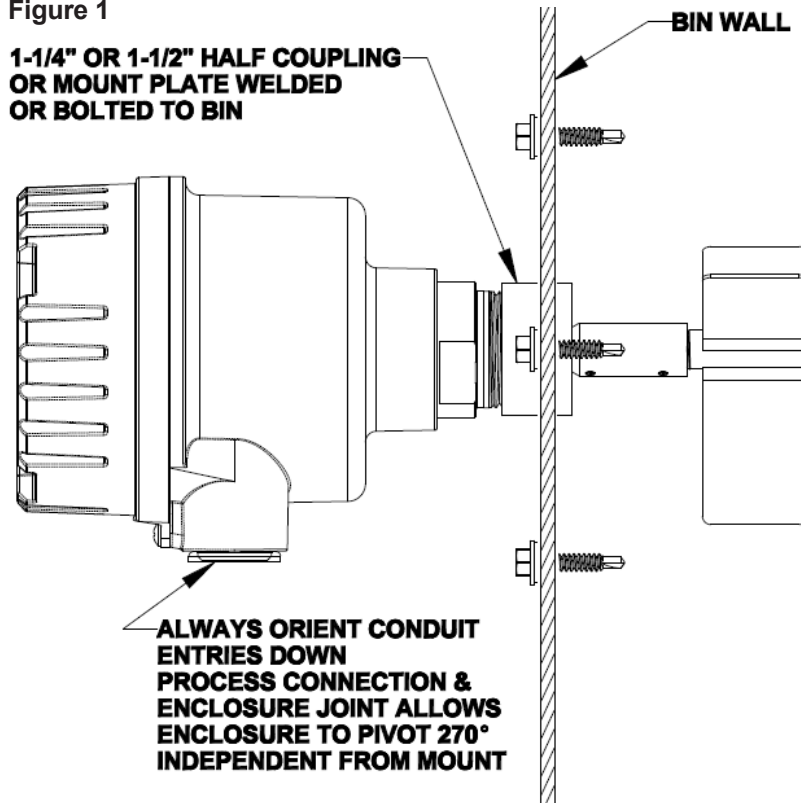
## 2.0 INSTALLATION

### 2.1 Location and Mounting

#### SIDE MOUNT

1. Determine location and cut hole inside of bin to fit outside diameter of 1-1/4" pipe coupling (1.950").
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 rotary so conduit entries are pointed down toward the ground.
4. Screw paddle into place and replace lock pin.
5. Shaft and paddle should be shielded in low level mounting to protect from material flow.
6. For side mounting, a solid coupler is recommended.

Figure 1

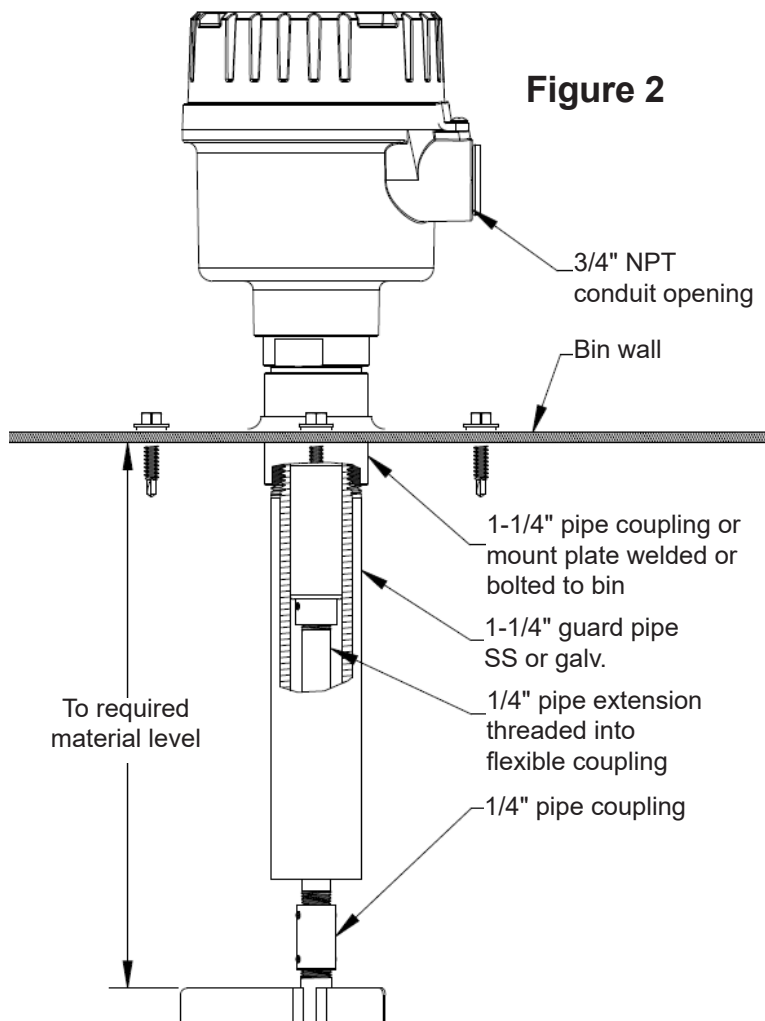


## 2.0 INSTALLATION

### 2.1 Location and Mounting

#### TOP MOUNT

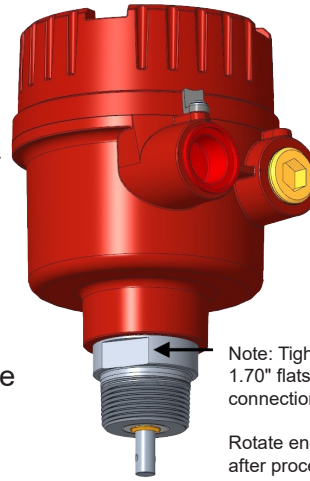
1. Determine mounting location and cut a hole in top of bin to fit outside diameter of 1-1/4" pipe coupling (1.950").
2. Position coupling halfway into bin and weld to bin.
3. Turn rotary so conduit openings are in desired location.
4. Add 1/4" extension pipe of desired length with standard 1/4" coupling on bottom end.
5. Cut 1-1/4" support pipe approximately 4" shorter than overall length of 1/4" pipe shaft if 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.



## MOUNTING

Use the 1.70" flats provided on the process connection for tightening the instrument into the mounting coupler or mounting plate.

The enclosure can be rotated 360 degrees after the process connection is tight. NOTE: For side mount application, rotate enclosure conduit entries DOWN after the process connection is tight.



**NOTE:**  
3/4 NPT conduit.  
Torque electrical fittings to 5 ft lbs minimum

Note: Tighten/loosen only using the 1.70" flats provided on the process connection.

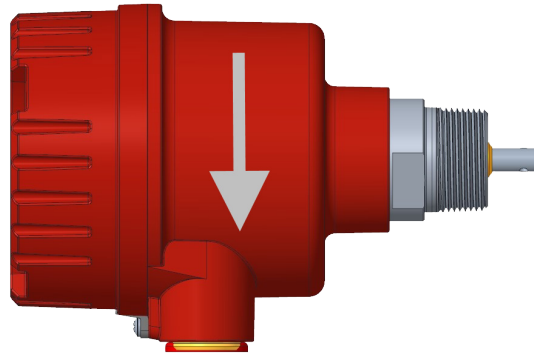
Rotate enclosure conduit entries down after process connection is tight.

## MOUNTING ORIENTATION (Side Mount)

To prevent moisture or humidity from entering the unit, the rotary MUST be mounted with the conduit entries facing down.

## Conduit Seal

When installing the rotary in environments where moisture or moist air may enter the unit through the electrical conduit, the conduit openings should be sealed with an appropriate duct seal compound or putty.



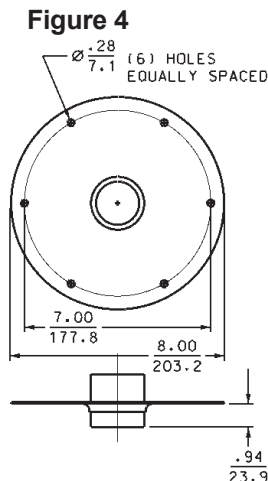
NOTE: Conduit entries must be fitted with a suitable sealing device for the Hazardous Location. All unused conduit entries must be sealed and if any conduit entry blanking plugs are removed or replaced, they must be fitted with a suitable certified sealing device.

## Mounting Plates

Mounting plates are needed when a completely assembled rotary is mounted on the bin wall from the outside. Cut a 5-1/2" hole in the bin. Drill six bolt holes around the hole to match the mounting plate. Bolt the plate, with the unit attached, into place. Mounting plates are available in carbon or stainless steel

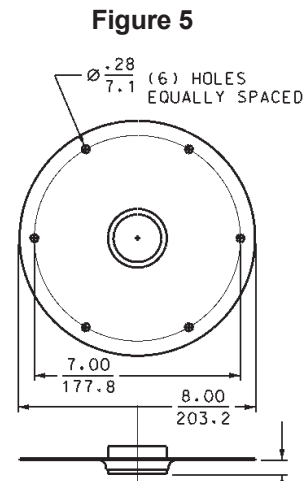
### Full Coupling

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




### Half Coupling

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



## 2.2 Input Power and Field Wiring

 The BMRX-100 is available in 115 VAC, 230 VAC, and 24 VAC supply voltages. See the voltage rating on the nameplate for the supply voltage. Field wiring should conform to all national and local electrical codes and codes of any other agency or authority with jurisdiction over the installation. For power input, use wire sized and rated for the maximum voltage and current according to equipment ratings with a temperature rating of at least 70°C. For SPDT switch output, use wire sized and rated for the maximum voltage and current for the application, up to 250 VAC 10A, and has a temperature rating of at least 70°C. Installation must be done by qualified personnel. **NOTE: Open the screw terminals fully before inserting wiring.**

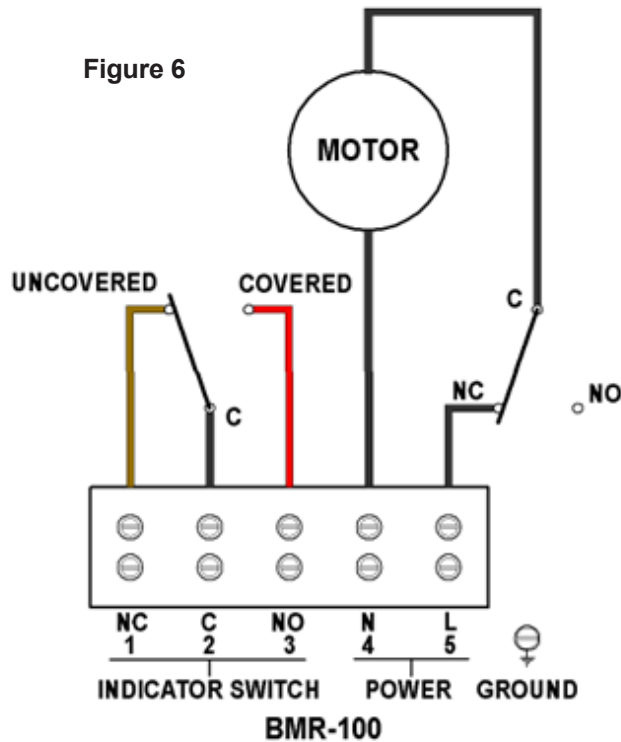
### BMRX-100 Wiring Input Power

Power input to the BMRX-100 is connected to the POWER terminals labeled L and N.


### AC Models

On AC models if one of the conductors is grounded, connect to the N terminal. Connect the ungrounded conductor to the L terminal. If neither conductor is grounded, connect one to the N terminal and the other to the L terminal.

Figure 6



## 2.3 Grounding

 An equipment grounding connection (earth ground) to the rotary is required for safety. Connect the ground conductor to the green grounding screw inside in the enclosure. An external equipotential bonding connection where local authorities permit or require such a connection.

## 3.0 SPDT INDICATOR SWITCH

The SPDT indicator switch is a set of switch contacts where the C terminal makes a connection to the NC terminal when the paddle is uncovered. When the paddle becomes covered, the C terminal breaks the connection to the NC terminal and makes a connection to the NO terminal. The voltage on the C terminal is present on the NC terminal when the paddle is uncovered and when the paddle is covered the voltage on C terminal is present on NO terminal.

## 4.0 WARRANTY AND CUSTOMER SERVICE

### 4.1 Limited Warranty

**LIMITED PRODUCT WARRANTY.** Products manufactured by Seller are warranted for a period of one (1) year from date of shipment against defective materials and workmanship (the "Warranty Period"). SELLER MAKES NO OTHER WARRANTY, EXPRESS OR IMPLIED, AND ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE IS HEREBY DISCLAIMED AND EXCLUDED.

This limited warranty does not extend to labor charges or other costs related to the removal and/or replacement of defective products or services. Any technical advice or services furnished by Seller with respect to the products is given without charge, and Seller assumes no obligation or liability for the advice given or results obtained, all such advice being given and accepted at Buyer's sole risk and expense. If the products are being acquired for resale, Buyer will make, in connection with any such resale, only those warranties contained herein and will indemnify Seller and its officers, directors, agents, employees, affiliates, successors, and assigns against any claims, causes of actions and judgments which arise from any representations, warranties, or agreements made by or entered into by Buyer, other than those contained herein.

**WARRANTY EXCLUSIONS.** Notwithstanding Seller's Limited Product Warranty, products that have been or are (1) damaged by accident, corrosion, the elements, abuse, misuse, misapplication, vandalism, negligence, improper transportation, handling, storage, use or lack of proper and reasonable maintenance, (2) repaired or altered by anyone other than Seller or its authorized service providers, (3) modified or altered without Seller's written authorization, or (4) specially manufactured by Seller as per specifications provided by Buyer, are expressly excluded from Seller's Limited Product Warranty.

### 4.2 Customer Service

BinMaster's toll-free Customer Service phone number is 1-800-278-4241. Call the Technical Service Department for support Monday through Friday from 8:00 AM to 5:00 PM Central Time. International customers call 1-402-434-9102 or [techsupport@binmaster.com](mailto:techsupport@binmaster.com).

## 5.0 DISPOSAL

This product contains recyclable materials and electronics that can be easily separated and recycled by specialized recycling companies. Consult local authorities for proper disposal locations.

## EU/IEC Declaration of Conformity

### Manufacturer:

Garner Industries LLC. dba BinMaster Level Controls  
2021 Transformation Drive Suite 2230  
Lincoln, NE 68508 USA  
Phone: 402-434-9100

Garner Industries LLC 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 level control for bulk solid materials.

**Product:** BMRX-X00 Level Control

**Models:** BMRX-100

### Manufacturing Location:

Garner Industries LLC. dba BinMaster  
3435 Schworer Drive, Lincoln, NE 68504 USA

### ATEX Directive 2014/34/EU

ATEX Classification



II 1 D Ex ta h IIIC T135°C Da

(Ta = -40°C to +55°C)

IECEX

Ex ta IIIC T135°C Da Ex h IIIC T135°C Da

### Examination certificates:

ETL24ATEX0401X

IECEX ETL 24.0021X

### Harmonized standards:

IEC 60079-0:2017 Ed.7

IEC 60079-1:2014 Ed.7

IEC 60079-31:2022 Ed.3

ISO 80079-36:2016 Ed.1

ISO/IEC 80079-37:2016

IEC 61010-1:2010 Ed.3+C1;C2

**Notified Body:** Intertek 0359

All test reports and documentation are held and can be obtained from  
Garner Industries LLC dba BinMaster.  
Location: Lincoln, Nebraska, USA

Doug Hartzell, Senior Design Engineer  
8/15/2024

BinMaster: Division of Garner Industries

Lincoln, NE

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