

# ***BINMASTER*** Rotary Indicator

## **Measure. Detect. Alert.**

### Point Level Measurement for Inventory Control

Detect high and low levels while protecting valuable bulk material inventory with rotary paddle level indicators from BinMaster.

Made in Lincoln, Nebraska, USA, following ISO-9001:2015 quality processes, BinMaster offers the widest variety of voltages, custom extensions, paddles, and mounting options available. Select from fail-safe, mechanical, or compact mini rotaries – all shipped fast and built to last.



# About rotaries

## What is a rotary?

A rotary is used for point-level detection in powders and bulk solids with a bulk density of 2 pounds to over 100 pounds per cubic foot. It is used in bins, silos, chutes, and conveyors storing, moving, or processing powders, pellets, and granular materials.

### How Does it Work?

The rotary turns a paddle continuously until it is stopped by material, then closes a relay to indicate a change in status.



## Rotary Alert Notifications

Wire a rotary to a signal beacon, warning light, or audible horn to alert when a full or empty condition occurs. Alternatively, use a rotary with an integrated light option for status notification on the unit.

## Rotary for Process Control

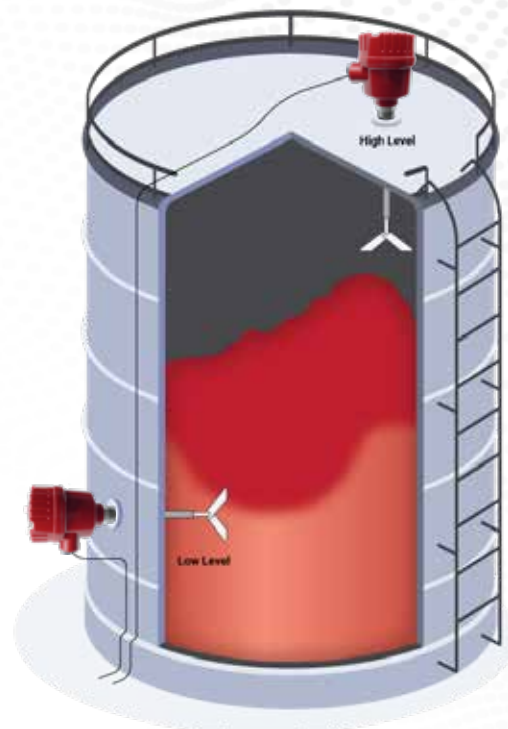
Fail-safe models can be wired to shut off a process, such as stopping a grain leg or conveyor when a vessel is full.

### High-Level Control During Filling

The paddle continually rotates until the material reaches it. Sensing resistance, the motor rotates an actuator arm, activating a switch wired to an alarm or process equipment to prevent overfilling.

### Low-Level Control When Emptying

When covered, the paddle is de-energized and not rotating. As material drops below the paddle, the actuator arm springs back, the motor re-energizes, and the paddle rotates, sending an alert or starting up a process system.





# Models for every measurement mission

## BMRX-300 with Status Light

BinMaster's BMRX-300 rotary level switch features true fail-safe operation and a built-in LED indicator light. The bright LED changes from green to red when the paddle stops turning when the bin is full or empty.



## BMRX-200 with Power Failure Protection

The BMRX-200 includes relay outputs that are designed to be "fail safe" in case of power failure. If power fails to the rotary, the relays will default to the output deemed "safe" for a high-level or low-level indicator application.

## BMRX-100 with Mechanical Operation

BinMaster's standard rotary features a reliable mechanical design and an SPDT switch. It has no printed circuit board, so it's impervious to moisture and vibration found in many tough processing environments.



## MINI Rotary for Small Vessels

Compact design for top or side mounting on small bins or hoppers and in tight spaces. Four-vane or bayonet style options, adjustable sensitivity, and simple  $\frac{3}{4}$ " installation.

	BMRX-300	BMRX-200	BMRX-100	MINI
Operation	Digital PCB	Digital PCB	Mechanical	Mechanical
Fail-Safe	True	Power failure	No	No
Switch	DPDT	DPDT	SPDT	SPDT
LED Indicator	Yes	No	No	No
Approvals	Hazardous	Hazardous	Ordinary	Ordinary
Time Delays	Yes	Yes	No	No
Screw-Off Cap	Yes	Yes	Yes	Yes
Warranty	2 Year	2 Year	2 Year	2 Year

# Extended rotaries

**BinMaster extensions** allow the rotary to adapt to tailored point level detection needs. Vertically oriented extensions measure further down into the bin to prevent overfilling or to protect valuable sensors at the top of the bin. Horizontal extensions enable mounting through thick bin sidewalls.



## Vertical Extensions

Get high-level alerts and specify headroom with a top-mounted rotary with a custom extension up to 144"



## Horizontal Extensions

Side mount through thick concrete walls using a 6", 8", or 12" extended drive shaft and protective shaft guard with a sealed bearing end to support the shaft and prevent packing



## Sealed Extensions

Protective bearings form a seal between the shaft and shaft guard to prevent false alarms caused by material packing



## Flexible Extensions

A flexible 8 mm steel cable from 4" to 14' long detects the level of heavy falling material when attached to a top-mounted rotary

# Rotary connections

**Aggressive, corrosive, or sanitary conditions** require custom process connections. Get aluminum or stainless steel connections in 1-1/4" and 1-1/2" sizes with an internal 1.0" NPT option.

## Adjustable Couplings

Vary the depth of a top-mounted rotary from 6" to 72" without entering the vessel using a sliding extension

## Heat Tubes

Distance the electronics from the heat source when external temperatures exceed 140° F (60°C) with 6", 8", or 12" aluminum or stainless-steel extensions that can be side or top-mounted



## Tri-Clover Connections

Stainless steel mounts, connections, and clean-in-place features for food, feed, and pharmaceutical use

## Stainless Steel Process Connections

1-1/4" or 1-1/2" stainless steel process connections stand up in corrosive or food processing applications like corrosive, fertilizer, or food processing applications

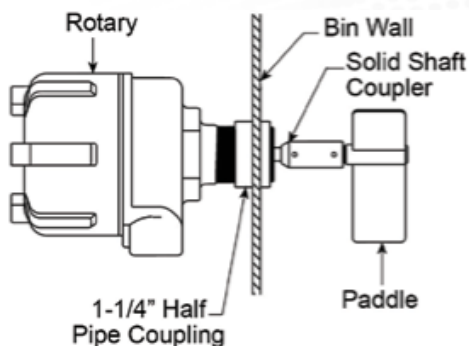




# Mounting a rotary level indicator

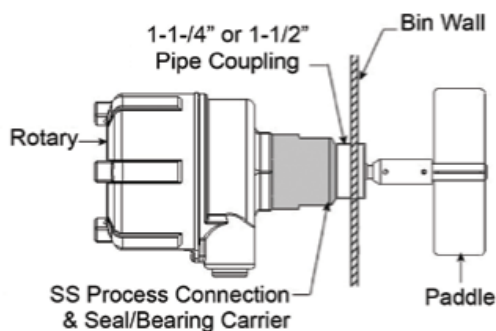
## Side mounting or horizontal mounting

Uses a solid shaft coupler and a half-coupling mounting plate, available in carbon steel or stainless steel.



### Standard horizontal or vertical mounted mount

Standard mounted rotary for vertical, horizontal and angled installations.

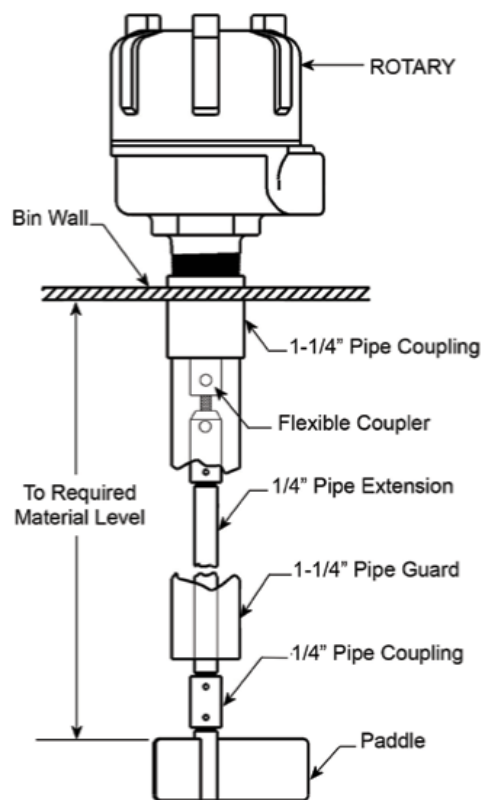


### Standard Horizontal/Vertical Mount

The optional stainless steel process connection and seal/bearing carrier is used in corrosive applications. All parts in contact with the material in the bin are stainless steel.

## Top mounting plates

Plates available in 0°, 10°, 20°, and 30° angles use a flexible shaft coupler to absorb impact when loading and a full coupling mounting plate.



### Standard Extended Vertical Mount

Standard mounted rotary for straight vertical installations. Angled mounting plates are available for sloped roof installations. The pipe guards and extensions are available in both galvanized or stainless steel.

See Rotary Configuration Guide for additional information

Model	Degree	Material	Coupling	White Powder Coat	Gasket
GRMP-1	0°	Mild Carbon Steel	Half	Yes	Black Neoprene
GRMP-2	0°	Mild Carbon Steel	Full	Yes	Black Neoprene
GRMP-3	0°	Stainless Steel	Half	No	Black Neoprene
GRMP-4	0°	Stainless Steel	Full	No	Black Neoprene
GRMP-9	10°	Mild Carbon Steel	Full	Yes	Black Neoprene
GRMP-13	30°	Mild Carbon Steel	Full	Yes	Black Neoprene
GRMP-14	0°	Stainless Steel	Half	No	White Silicone
GRMP-15	0°	Stainless Steel	Full	No	White Silicone
GRMP-16	20°	Mild Carbon Steel	Full	Yes	Black Neoprene

# Choosing a rotary paddle

## Paddles

BinMaster offers a wide selection of paddle for very light to heavy materials. Select paddles will collapse to fit through a 1.25" to 1.5" opening allowing installation without entering the vessel. For some applications, a direct connect paddle option will not require a coupler.

Model	Type	Construction	Turning Diameter	Insertion Depth	Blade Height	Connection	Material Density
GRP-1	3-Vane	Stainless Steel	7.0"	2.7"	2.0"	Coupler	Light
GRP-2	3-Vane	Stainless Steel	5.0"	2.2"	1.5"	Coupler	Medium
GRP-3	Single Vane Insertable	Stainless Steel	4.4375"	2.0"	1.0"	Coupler	Heavy
GRP-11	3-Vane	Nylon	7.0"	2.6"	1.9375"	Coupler	Light
GRP-12	3-Vane	Nylon	5.0"	2.1"	1.4375"	Coupler	Medium
GRP-22	3-Vane	Stainless Steel	5.0"	2.2"	1.0"	Coupler	Heavy
GRP-23	Bayonet	Stainless Steel	6.4"	6.2"	1.2"	Coupler	Medium
GRP-24	Belt	Belting	1.5"	13.2"	12.0"	Coupler	Heavy with Large Particle Size
GRP-25	3-Vane	Stainless Steel	5.4"	5.7"	5.0"	Coupler	Very Light
GRP-26	3-Vane	Stainless Steel	7.0"	3.5"	2.0"	Direct	Light
GRP-27	Bayonet	Stainless Steel	6.4"	8.0"	1.2"	Direct	Medium
GRP-28	3-Vane	Stainless Steel	7.0"	5.7"	5.0"	Coupler	Very Light
GRP-29	3-Vane	Stainless Steel	5.4375"	5.7"	5.0"	Direct	Very Light
GRP-30	3-Vane	Stainless Steel	5.0"	4.0"	1.5"	Direct	Medium
GRP-31	Single Vane	Stainless Steel	7.0"	2.25"	1.625"	Coupler	Heavy
GRP-34	Single Vane	Stainless Steel Collapsible to 1.5" NPT	8.0"	4.7"	1.375"	Direct	Medium to Heavy
GRP-35	Double Vane	Stainless Steel Collapsible to 1.5" NPT	8.0"	4.8"	1.375"	Direct	Medium to Heavy
GRP-36	Single Vane	Stainless Steel Collapsible to 1.5" NPT	8.0"	4.8"	1.375"	Coupler	Medium to Heavy
GRP-37	Double Vane	Stainless Steel Collapsible to 1.5" NPT	8.0"	4.8"	1.375"	Coupler	Medium to Heavy



3-Vane Paddle



Bayonet Paddle



Single Vane Paddle



Nylon Paddle

# Rotary specifications



	BMRX-100	BMRX-200 DC	BMRX-200 AC	BMRX-300 DC	BMRX-300 AC	Mini
Power Supply	115 VAC 50/60 Hz	12 to 24 VDC	115 VAC 50/60 Hz	12 to 24 VDC	115/230 VAC, 50/60 Hz	110 VAC 50/60 Hz
	230 VAC 50/60Hz		230 VAC 50/60Hz			220 VAC 50/60 Hz
	24 VAC 50/60Hz		24 VAC 50/60Hz			24 VAC 50/60 Hz
Supply Tolerance	-15% to +10%	-15% to +10%	-15% to +10%	-15% to +10%	-15% to +10%	
Load	4 VA	4 VA	5 VA	4 VA	7 VA	
Fuse	Not applicable	400mA resettable fuse	Not applicable	400mA resettable fuse	2 AMP 250V TR5 Time Lag PCB mount	Not applicable
Ambient Temperature (electronics)	-40°F to +131°F (-40°C to +55°C)	-40°F to +131°F (-40°C to +55°C)	-40°F to +131°F (-40°C to +55°C)	-40°F to +131°F (-40°C to +55°C)	-40°F to +131°F (-40°C to +55°C)	-40°F to +131°F (-40°C to +55°C)
Process Temperature	400°F (204°C)	400°F (204°C)	400°F (204°C)	400°F (204°C)	400°F (204°C)	
Enclosure Type	4X / IP66	4X / IP66	4X / IP66	4X / IP66	4X / IP66	NEMA 1
Enclosure Material	Die cast aluminum, powder coat finish	Die cast aluminum, powder coat finish	Die cast aluminum, powder coat finish	Die cast aluminum, powder coat finish	Die cast aluminum, powder coat finish	Polycarbonate
Relay Output	SPDT contacts; 10 Amps 250 VAC	DPDT contacts; 8 Amps 250 VAC	DPDT contacts; 8 Amps 250 VAC	DPDT contacts; 8 Amps 250 VAC	DPDT contacts; 8 Amps 250 VAC	SPDT contacts; 3 Amps 250 VAC
Fail Safe	Not applicable	Switch selectable "High" or "Low" level modes	Switch selectable "High" or "Low" level modes	Switch selectable "High" or "Low" level modes	Switch selectable "High" or "Low" level modes	Not applicable
Time Delay	Not applicable	Not applicable	Not applicable	Selectable 5 seconds (default); programable to 30 seconds	Selectable 5 seconds (default); programable to 30 seconds	Not applicable
LED Status Indication (optional)	Not applicable	Not applicable	Not applicable	Paddle rotating: Rotating GREEN	Paddle rotating: Rotating GREEN	Not applicable
				Paddle covered: Solid RED	Paddle covered: Solid RED	
				Instrument Fault: Flashing YELLOW	Instrument Fault: Flashing YELLOW	
Status Relay Output	Not applicable	Not applicable	Not applicable	200V 1.5 Amp AC or DC SPST - Normally Open	200V 1.5 Amp AC or DC SPST - Normally Open	Not applicable
Mounting	1-1/4" NPT	1-1/4" NPT, 1-1/2" NPT, 1-1/2" Tri-clover	1-1/4" NPT, 1-1/2" NPT, 1-1/2" Tri-clover	1-1/4" NPT, 1-1/2" NPT, 1-1/2" Tri-clover	1-1/4" NPT, 1-1/2" NPT, 1-1/2" Tri-clover	3/4" PF
Conduit Entries	3/4" NPT	3/4" NPT	3/4" NPT	3/4" NPT	3/4" NPT	Not applicable
Shaft Seal	1/2 micron, 30 PSI	1/2 micron, 30 PSI	1/2 micron, 30 PSI	1/2 micron, 30 PSI	1/2 micron, 30 PSI	
Available certifications (contact BinMaster to verify certifications by model)	> Hazard locations C/US Class II > IECEx/ATEX Zone 20,21 C/US Class II > Ordinary locations	> Hazardous Locations C/US Class I & II > Hazardous Locations C/US Class II > Hazardous Locations IECEx / ATEX Zone 1,20,21 C/US Class I & II > Hazardous Locations IECEx / ATEX Zone 20,21 C/US Class II > Ordinary locations	> Hazardous Locations C/US Class I & II > Hazardous Locations C/US Class II > Hazardous Locations IECEx / ATEX Zone 1,20,21 C/US Class I & II > Hazardous Locations IECEx / ATEX Zone 20,21 C/US Class II > Ordinary locations	> Hazardous Locations C/US Class II > Hazardous Locations IECEx / ATEX Zone 20,21 C/US Class II > Hazardous Locations C/US Class I & II > Hazardous Locations IECEx / ATEX Zone 1,20,21 C/US Class I & II > Ordinary locations	> Hazardous Locations C/US Class II > Hazardous Locations IECEx / ATEX Zone 20,21 C/US Class II > Hazardous Locations C/US Class I & II > Hazardous Locations IECEx / ATEX Zone 1,20,21 C/US Class I & II > Ordinary locations	



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