



Practical solutions...at every level!

# Model KA & KAX Rotary Paddle Bin Monitors

## FEATURES & ADVANTAGES

- ▼ **Provides reliable indication of high, low or intermediate levels** of material in bins, silos and other storage vessels depending on mounting location.
- ▼ **Output circuit options** allow the sensor to be used to turn “on” or “off” other processes based on the detected presence or non-presence of material.
- ▼ **Basic, easy to understand electro-mechanical design** that is economical, versatile and time tested.
- ▼ **DC voltage model** uses a brushless AC motor with a voltage converter circuit to provide long motor life. See Bulletin #226A for more information.
- ▼ **Motor shut-off feature** maximizes sensor life.
- ▼ **Ordinary location and Hazardous location** models are available.
- ▼ **Rugged powder coated cast aluminum housing with twist on/off cover** provides easy and ample wiring access.
- ▼ **Wide array of paddles and other accessory options** that allow the sensor to be adapted to fulfill specific application requirements.



### Practical Tip

Rugged, aluminum enclosure is superior in applications where a fragile plastic enclosure is vulnerable to harsh installation conditions.

## PRINCIPLE OF OPERATION

The KA and KAX rotary paddle bin monitor is fundamentally a torque detector which provides an output switched condition when the resistance of the material surrounding the paddle is greater than the drive mechanism used to rotate the paddle.

The rotary paddle bin monitor is installed to a vessel wall with a paddle protruding into vessel. A low-power, low-speed synchronous motor drives a paddle which rotates freely in the absence of material. When the paddle rotation is impeded by the presence of material, the motor actuates an output switch which is made available for customer connection to a control system. A moment later, the bin monitor switches off the motor to prolong its life. When the material level drops below the paddle, a spring returns the motor to its original position, re-energizing the motor, re-establishing paddle rotation, and returning output switch to its normal non-actuated status.

Sensitivity of the rotary paddle bin monitor is determined by the number of paddle vanes (single, 2-vane, 3-vane, etc) and the spring tension setting within the sensor.

## PRACTICAL APPLICATIONS

- ▼ For applications when sensors that are not affected by electrical properties of target materials, such as dielectric, are preferred.
- ▼ Excellent when facility personnel are expected to perform in-field troubleshooting and maintenance with virtually no prior training.
- ▼ Reliable sensing of materials as light as 5 lbs/ft<sup>3</sup> (80kg/m<sup>3</sup>) with proper mounting location & proper paddle selection.
- ▼ Typical applications include, but are not limited to: Grains, Feeds, Pet Food, Dry Food Ingredients, Spices, Cereals, Coffee, Silica Sand, Plastics, Rocks, Pellets, Wood, Calcium Dust, Rubber, Metals, Regrind, Coal, Peanuts, Malt, Clays, Resin, Limestone, Foundry Sand, Pre-Mix Ingredients, Rawhide, Sawdust and more.

## OPTIONS

- ▼ Hazardous location approvals for gases and dust (Model KAX).
- ▼ Choice of paddle accessories for reliable material detection and application-specific material detection containing varying points / distances. (Please refer to Bulletin #216H for paddle selection guide.)
- ▼ High temperature unit available.
- ▼ Up to 3 switched outputs.
- ▼ Variety of extensions, guards, couplings and mounting plates are available to meet specific process condition requirements.
- ▼ Pipe extension models:  
144” (3.65m) maximum length.
- ▼ Field adjustable cable extensions:  
78” (2m) maximum length.



Scan this with a smartphone QR-Code app for more product details.



## SPECIFICATIONS

More product specifications can be found on Monitor's Web site.

<b>Power Requirements:</b>	115 VAC, 50/60 Hz; 230 VAC, 50/60 Hz; 24 VAC, 48 VAC 50/60 Hz; 12/24 VDC	<b>Housing:</b>	Die cast aluminum, powder coated NEMA 4 / ENCLOSURE TYPE 4, IP66
<b>Power Consumption:</b>	4W max.	<b>Listings / Approvals:</b>	KA: KAX:
<b>Internal Bin Temperature:</b>	Standard Unit: to 300°F (+150°C) Hi-Temp. Unit: 300 to 500°F (150 to 260°C) without air-cooling to 750°F (400°C) with air-cooling [0.5 psig / 2.14 CFM]		UL and CSA: Ordinary Locations UL and CSA: Class I, Div. 1 & 2, Groups C, D; Class II, Div. 1 & 2, Groups E, F, G ATEX: Ⓜ II 1/2 D c T 100°C ExtD A20/A21 T 100°C (Ta -40°C to +93°C) IP6x IEC Ex: DIP A21 IP6X T <sub>A</sub> 100°C -40°C to +93°C
<b>Ambient Operating Temp.:</b>	-40°F to +200°F (-40°C to +93°C) ext. amb.	<b>All Models:</b>	CE Mark
<b>Conduit Connection:</b>	Two (2) 3/4" NPT (for 1-1/4" NPT mounts) Two (2) M20 (for 1-1/2" BSPT mounts)	<b>Material of Construction:</b>	
<b>Outputs Contacts:</b>	2-Circuit Configuration: Two SPDT 15A @ 250 VAC ea. max 3-Circuit Configuration: One SPDT 15A @ 250 VAC max One DPDT 10A @ 250 VAC max	<b>Flexible Coupling:</b>	304 stainless steel
<b>Maximum Pressure:</b>	30 PSI (2 bar) maximum	<b>Mounting Plates:</b>	Carbon steel or 304 stainless steel
<b>Sensitivity:</b>	5 lbs/ft <sup>3</sup> (80 kg/m <sup>3</sup> ) min. material density (when using large 3-vane paddle)	<b>All Paddles except Ex-Flex:</b>	304 stainless steel
<b>Mounting Connection:</b>	1-1/4" NPT or 1-1/2" BSPT	<b>Ex-Flex Belt:</b>	304 stainless steel coupling, rubber/fabric blend belt
<b>Shipping Weight-Approx.:</b>	7 lbs (3.18 kg) - with optional paddle	<b>Flexible Cable Extension:</b>	304 stainless steel
<b>Shipping Dimensions:</b>	9L x 9W x 12H" (229 x 229 x 305mm)	<b>Solid Shaft Extension/Guards:</b>	Galvanized or 304 stainless steel
		<b>Shaft Seal:</b>	Nitrile

## ORDERING INFORMATION

Model KA and KAX Rotary Paddle Bin Monitors	
Select	Model Type
3	KA
4	KAX
Select	Operating Voltage
0	115 VAC
1	240 VAC
3	12/24 VDC
8	24 VAC
9	48 VAC
Select	Circuit Configurations / Process Connection
1	2 circuits (2 SPDT) / 1-1/4" NPT
2	3 circuits (1 SPDT, 1 DPDT) / 1-1/4" NPT
6	2 circuits (2 SPDT) / 1-1/2" BSPT <sup>2</sup>
7	3 circuits (1 SPDT, 1 DPDT) / 1-1/2" BSPT <sup>2</sup>
Select	Approvals
1	UL/CSA/CE
2	ATEX/IECEx <sup>1</sup>
Select	Temperature Style
1	Hi-temp, CS <sup>2</sup>
2	Hi-temp, SS <sup>2</sup>
Blank	None
1 - 8	X X X - X X
	<b>Order Number</b>

### NOTES:

- 1 Available with Model KAX only.
- 2 On all **high temperature configurations** a mounting plate (either #1-0102, CS or #1-0113, SS) is automatically furnished as **the** process connection. Threaded mounts are not available. 1-1/2" BSPT process connection is not available with high temperature style selection. (See I&O Bulletin #214A.)

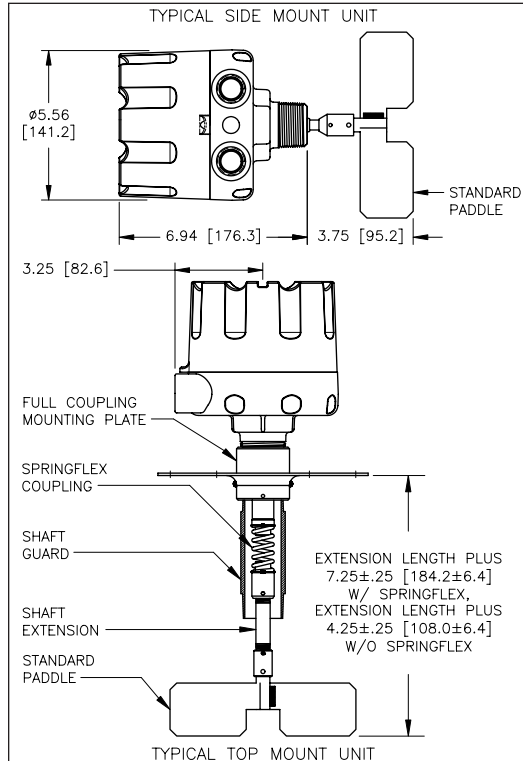
### ACCESSORIES:

Part #	Description	Part #	Description
<b>Mounting Plates:</b>			
1-0100	Mounting Plate, half coupling, CS, for R 1-1/2" (BSPT 1-1/2")	1-3335	Spring flex
1-0115	Mounting Plate, full coupling, CS, for R 1-1/2" (BSPT 1-1/2")	<b>Paddles:</b>	
1-0101	Mounting Plate, half coupling, CS, for 1-1/4" NPT	1-4145	Paddle, 1-vane insertable
1-0102	Mounting Plate, full coupling, CS, for 1-1/4" NPT	1-4146	Paddle, 3-vane standard
1-0112	Mounting Plate, half coupling, SS, for 1-1/4" NPT	1-4141	Paddle, 3-vane large
1-0113	Mounting Plate, full coupling, SS, for 1-1/4" NPT	1-4193	Paddle, 1-vane scimitar
1-3316	Mounting Plate, heavy duty alum., for 1-1/4" NPT	1-4135	Paddle, 2-vane
<b>Solid Shaft Extensions:</b>			
1-1175-1-#	1/4" Pipe, SCH-40, Galvanized	1-4156	Paddle, 4-vane
1-1175-2-#	1/4" Pipe, SCH-40, 304 SS	1-4144	Paddle, 1-vane triangular
<b>Shaft Guards:</b>			
1-1174-1-#	1-1/4" Pipe, SCH-40, Galvanized	1-4137	Paddle, ex-flex belt
1-1174-2-#	1-1/4" Pipe, SCH-40, 304 SS	1-4161	Paddle, 2-vane collapsible
<b>Cable Extension:</b>			
		1-1176-2-78	Flexible Extension (304 SS, 78" (2m) Length - Can be modified in the field for a shorter length.)

\* # = Extension and guard lengths - not to exceed 144 inches (3.6 m) in length. Contact factory for more details.

## MECHANICALS

DIMENSIONS ARE SHOWN IN INCHES WITH MILLIMETER EQUIVALENT IN BRACKETS



Information on this sheet is subject to change without notice.



**ISO 9001:2008 Certified**