MONITOR

Practical solutions...at every level!

Model KA & KAX

Rotary Paddle Bin Monitors



(Paddle ordered separately)

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^3 (80kg/m^3) 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.

For more detailed information, please contact a Monitor representative or visit Monitor's website at http://www.monitortech.com/product_p_rotary.shtml

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.

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SPECIFICATIONS

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

Power Requirements:	115 VAC, 50/60 Hz; 230 VAC, 50/60 Hz; 24 VAC, 48 VAC 50/60 Hz; 24 VDC
Power Consumption:	4W max.
Internal Bin Temperature:	
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]
Ambient Operating Temp.:	-40˚F to +200˚F (-40˚C to +93˚C) ext. amb.
Conduit Connection:	Two (2) 3/4" NPT (for 1-1/4 NPT mounts) Two (2) M20 (for 1-1/2 BSPT mounts)
Outputs Contacts:	
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
Maximum Pressure:	30 PSI (2 bar) maximum
Sensitivity:	5 lbs/ft^3 (80 kg/m^3) min. material density (when using large 3-vane paddle)
Mounting Connection:	1-1/4" NPT or 1-1/2" BSPT
Shipping Weight-Approx.:	7 lbs (3.18 kg) - with optional paddle
Shipping Dimensions:	9L x 9W x 12H" (229 x 229 x 305mm)

Housing:	Die cast aluminum, powder coated NEMA 4 / ENCLOSURE TYPE 4, IP66
Listings / Approvals:	
KA:	UL and CSA: Ordinary Locations
KAX:	UL and CSA: Class I, Div. 1 & 2, Groups C, D; Class II, Div. 1 & 2, Groups E, F, G
ATEX/UKEx:	Ⓔx II 1/2 D Ex ta/tb IIIC T100˚C Da/Db Ex h IIIC T100˚C Da/Db (Ta -40˚C to +93˚C)
IECEx:	Ex ta/tb IIIC T100˚C Da/Db
All Models:	CE Mark UKCA Mark
Material of Construction:	
Flexible Coupling:	304 stainless steel
Mounting Plates:	Carbon steel or 304 stainless steel
All Paddles except Ex-Flex:	304 stainless steel
Ex-Flex Belt:	304 stainless steel coupling, rubber/fabric blend belt
Flexible Cable Extension:	304 stainless steel
Solid Shaft Extension/Guards:	Galvanized or 304 stainless steel
Shaft Seal:	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	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 [2]
7	3 circuits (1 SPDT, 1 DPDT) / 1-1/2" BSPT [2]

Select	Approvals
1	UL/CSA/CE
2	ATEX/IECEx [1]

Select	Temperature Style
1	Hi-temp, CS [2]
2	Hi-temp, SS [2]
Blank	None

1 - 8 X X X - X X Order Number

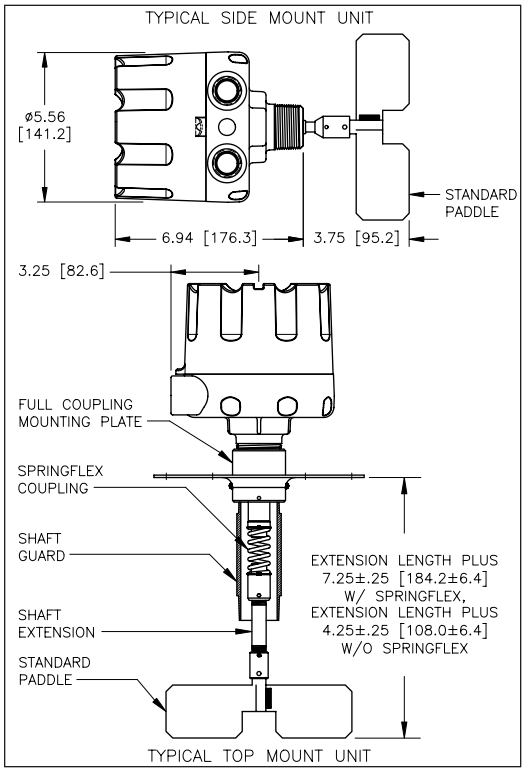
NOTES:

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.)

MECHANICALS

DIMENSIONS ARE SHOWN IN INCHES WITH MILLIMETER EQUIVALENT IN BRACKETS



ACCESSORIES:

Part #	Description
Mounting Plates:	
1-0100	Mounting Plate, half coupling, CS, for R 1-1/2 (BSPT 1-1/2")
1-0115	Mounting Plate, full coupling, CS, for R 1-1/2 (BSPT 1-1/2")
1-0101	Mounting Plate, half coupling, CS, for 1-1/4" NPT
1-0102	Mounting Plate, full coupling, CS, for 1-1/4" NPT
1-0112	Mounting Plate, half coupling, SS, for 1-1/4" NPT
1-0113	Mounting Plate, full coupling, SS, for 1-1/4" NPT
1-3316	Mounting Plate, heavy duty alum., for 1-1/4" NPT
Solid Shaft Extensions:	
1-1175-1-#*	1/4" Pipe, SCH-40, Galvanized
1-1175-2-#*	1/4" Pipe, SCH-40, 304 SS
Shaft Guards:	
1-1174-1-#*	1-1/4" Pipe, SCH-40, Galvanized
1-1174-2-#*	1-1/4" Pipe, SCH-40, 304 SS

Part #	Description
Flexible Coupling:	
1-3335	Spring flex
Paddles:	
1-4145	Paddle, 1-vane insertable
1-4146	Paddle, 3-vane standard
1-4141	Paddle, 3-vane large
1-4193	Paddle, 1-vane scimitar
1-4135	Paddle, 2-vane
1-4156	Paddle, 4-vane
1-4144	Paddle, 1-vane triangular
1-4137	Paddle, ex-flex belt
1-4161	Paddle, 2-vane collapsible
Cable Extension:	
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.

Information on this sheet is subject to change without notice.

2-Year Limited Warranty

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