

KP

Specialty level instrument

KTEK products

Measurement made easy



Introduction

The operation of the ABB Rotary Paddle Switch centers around a low torque, slow speed (1 RPM) synchronous motor. The absence of dry material allows the motor to turn the paddle uninterrupted. When the unit senses the presence of dry material via the restricted rotation of the paddle, the reversing torque actuates the internal SPDT switches and alarms the unit. The hysteresis motor continues to run in a restricted or completely stalled state without damage or overheating. The subsequent alarm can activate two controls, i.e., visual annunciators, start and stop of machinery such as conveyor belts, feeders, etc. The ABB Rotary Bin Level Indicator can be mounted on the top of the bin or on the side of the bin to indicate high, intermediate or low level. Flexible shaft couplings, extended shafts and shaft guards are available to allow for protected operation of the rotating paddle device in almost any position and orientation.

Features:

- Drop In Replacement for Existing Rotary Paddle Switches
- Lowest Cost Level Solution
- Application Versatility
- Variety of Paddles for Differing Densities
- Mounting for Side or Top of Silo / Bin
- Reduced Footprint
- Two 20 Amp, SPDT Switches
- 120 or 240 Operating Voltage
- Non-Contact, Double Shielded Bearings
- Screw On Cover for Easy Accessibility
- Shaft Lip Seal Rated to 140 psi / 9.7 bar

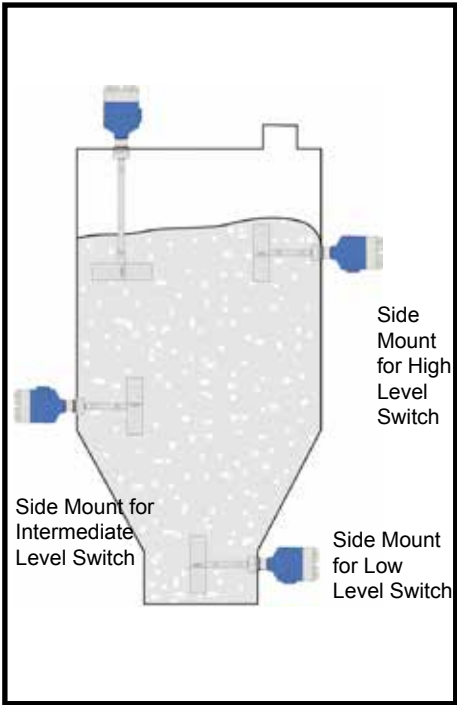
Options:

- Shaft Extensions to 20 ft. / 6.1m
- Shaft Guards to 20 ft. / 6.1 m
- Explosion Proof Housing
- External Indicator Light

APPLICATIONS

The Model KP's durable, rugged design is compatible with many bulk solids, pelletized and granular applications. The KP rotary paddle switch can be used for level indication of materials with densities of 10 lbs./ft3 and greater. The KP is ideal for installations where almost any dry bulk material is contained in hoppers, silos, bins and tanks. Typical applications and approximate densities include, but are not limited to:

Sawdust	17 lbs/ft ³	Grain	48 lbs/ft ³	Coal	75 lbs/ft ³
Malt	21 lbs/ft ³	Wood	50 lbs/ft ³	Clays	85 lbs/ft ³
Oats	27 lbs/ft ³	Coarse Salt	50 lbs/ft ³	Silica Sand	95 lbs/ft ³
Resin	35 lbs/ft ³	Rawhide	55 lbs/ft ³	Portland Cement Powder	95 lbs/ft ³
Flour	37 lbs/ft ³	Rubber	70 lbs/ft ³	Limestone	95 lbs/ft ³
Peanuts	40 lbs/ft ³	Calcium Dust	75 lbs/ft ³	Rocks	100 lbs/ft ³
Feed	40 lbs/ft ³	Pellets	75 lbs/ft ³	Foundry Sand	105 lbs/ft ³



SPECIFICATIONS

Operating Temperature	-40 to 170°F / -40 to 76°C		
Switch Ratings	AC Rating: 20 Amp Resistive, 1 HP@120 VAC or 2 HP@ 250 VAC DC Rating: 1/2 Amp @ 125 VDC, 1/4 Amp @ 250 VDC Lamp Load Rating: 10 Amp @ 125 VAC		
Approvals	Factory Mutual Research Corp (FM) & Canadian Standards Association (CSA) XP/ I / 1,2 / CD / T6 Ta=76°C; DIP / II, III / 1,2 / EFG / T6 Ta=76°C; Type 4 ATEX II 2 GD EEx d IIC T6 (T80°C)		

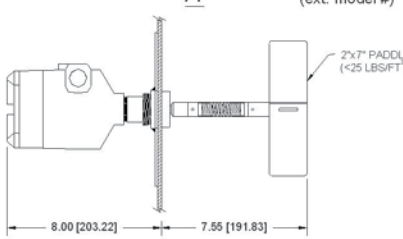
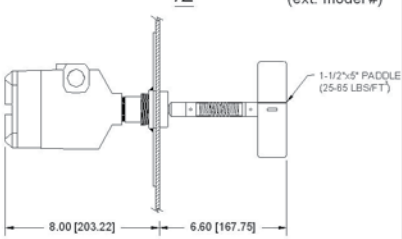
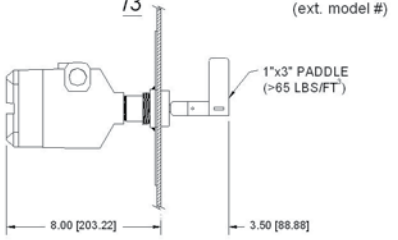
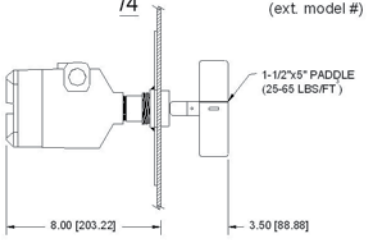
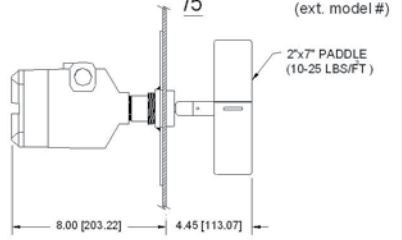


KP STANDARD MODELS

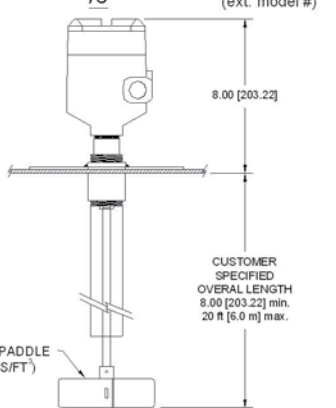
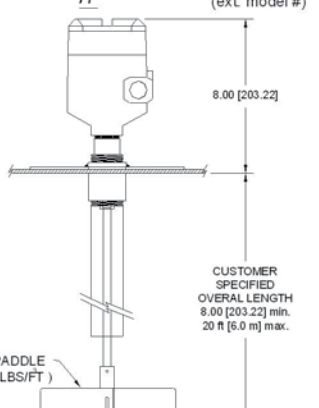
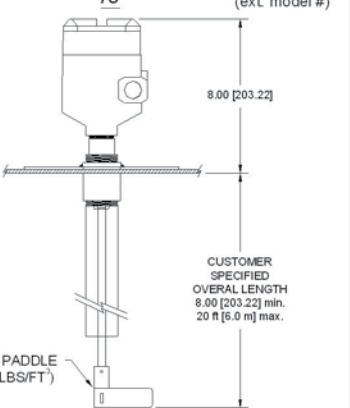
ORDERING INFORMATION:

1. Select the power & switch arrangement from table below. (Example: KP/2A)
2. Select the application configuration from the standard choices shown below. (example /1)
3. Combine the two selections to determine the abbreviated model order number. (example KP/2A/1)
4. For FM and CSA Explosion Proof units add /FM to model number. (Example: KP/2A/1/FM)
5. For ATEX approved unit add /CE to model number. (Example: KP/2A/1/CE)
6. For optional indicator light (general purpose only), add /L2 (120VAC) or /L3 (240VAC). (Example: KP/2A/1/CE/L2)

SIDE-BIN MOUNTING CONFIGURATIONS FOR HIGH, INTERMEDIATE, AND LOW LEVEL INDICATION

<p>POWER & SWITCH ARRANGEMENTS</p> <p>KP/2A 120VAC, DUAL SWITCH KP/3A 240VAC, DUAL SWITCH</p> <p>50/60 Hz, 4 WATT MOTORS STANDARD ARRANGEMENTS ARE FM / CSA APPROVED FOR CE APPROVED UNITS, ADD /CE TO MODEL NUMBER</p> <p>DIMENSIONS SHOWN: in.[mm]</p>	<p>/1 MP2/CF/P2/FM (ext. model #)</p>  <p>2"x7" PADDLE (<25 LBS/FT')</p> <p>SIDE BIN MOUNT, FLEX SHAFT COUPLING, 2"x7" 4-BLADE PADDLE</p> <p>FOR MOST APPLICATIONS WITH TEMPERATURES BELOW 160°F (71°C). USE WITH MATERIALS WEIGHING 10-25 lbs./cu.ft.</p>	<p>/2 /MP2/CF/P1/FM (ext. model #)</p>  <p>1-1/2"x5" PADDLE (25-65 LBS/FT')</p> <p>SIDE BIN MOUNT, FLEX SHAFT COUPLING, 1-1/2"x5" 4-BLADE PADDLE</p> <p>FOR MOST APPLICATIONS WITH TEMPERATURES BELOW 160°F (71°C). USE WITH MATERIALS WEIGHING 25 - 65 lbs./cu.ft.</p>
<p>/3 /MP2/X/P3/FM (ext. model #)</p>  <p>1"x3" PADDLE (>65 LBS/FT')</p> <p>SIDE BIN MOUNT 1"x3" SINGLE BLADE PADDLE</p> <p>FOR HEAVY APPLICATIONS SUCH AS SAND, GRAVEL, ETC. WEIGHING > 65 lbs./cu.ft.</p>	<p>/4 /MP2/X/P1/FM (ext. model #)</p>  <p>1-1/2"x5" PADDLE (25-65 LBS/FT')</p> <p>SIDE BIN MOUNT 1-1/2"x5" 4-BLADE PADDLE</p> <p>MOST COMMONLY USED WHERE SHORT SHAFT IS PREFERRED. USE WITH MATERIALS WEIGHING 25-65 lbs./cu.ft.</p>	<p>/5 /MP2/X/P2/FM (ext. model #)</p>  <p>2"x7" PADDLE (10-25 LBS/FT')</p> <p>SIDE BIN MOUNT 2"x7" 4-BLADE PADDLE</p> <p>MOST COMMONLY USED WHERE SHORT SHAFT IS PREFERRED. USE WITH MATERIALS WEIGHING 10-25 lbs./cu.ft.</p>

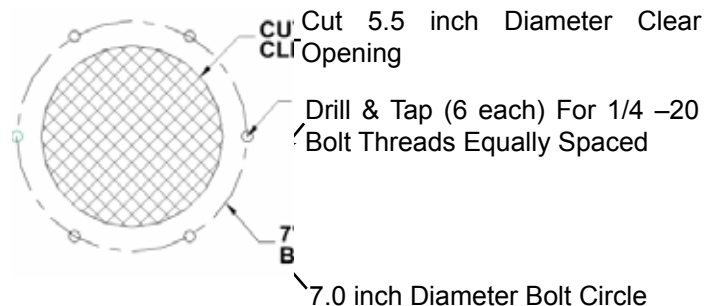
TOP-BIN MOUNTING CONFIGURATIONS PREFERRED METHOD FOR HIGH LEVEL INDICATION

<p>/6 /MP4/CS/P1/FM (ext. model #)</p>  <p>1-1/2"x5" PADDLE (25-65 LBS/FT')</p> <p>TOP BIN MOUNT, SOLID SHAFT COUPLING, 1-1/2"x5" 4-BLADE PADDLE (25-65 lbs./cu.ft.)</p> <p>COMMONLY USED TOP MOUNT CONFIGURATION W/ FULL COUPLING TO RECEIVE EXTENDED GUARD</p>	<p>/7 /MP4/CS/P2/FM (ext. model #)</p>  <p>2"x7" PADDLE (10-25 LBS/FT')</p> <p>TOP BIN MOUNT, SOLID SHAFT COUPLING, 2"x7" 4-BLADE PADDLE (10-25 lbs./cu.ft.)</p> <p>COMMONLY USED TOP MOUNT CONFIGURATION W/ FULL COUPLING TO RECEIVE EXTENDED GUARD</p>	<p>/9 /MP4/CS/P3/FM (ext. model #)</p>  <p>1"x3" PADDLE (>65 LBS/FT')</p> <p>TOP BIN MOUNT, SOLID SHAFT COUPLING, 1"x3" 4-BLADE PADDLE (>65 lbs./cu.ft.)</p> <p>COMMONLY USED TOP MOUNT CONFIGURATION W/ FULL COUPLING TO RECEIVE EXTENDED GUARD</p>
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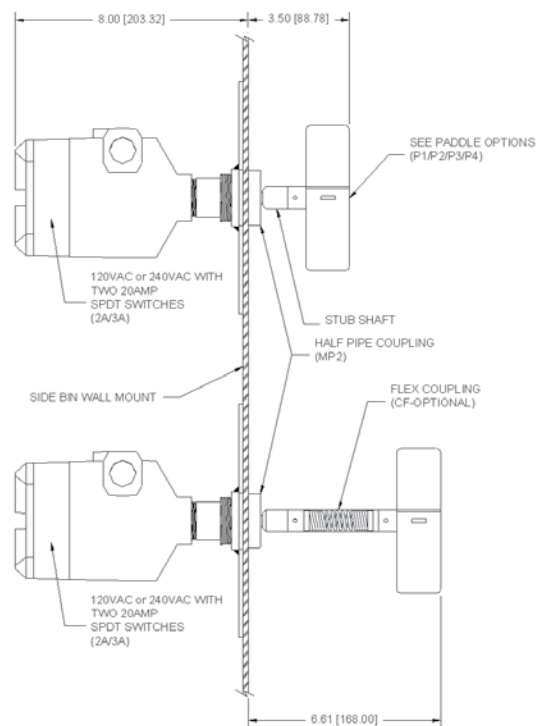
MOUNTING INFORMATION & RECOMMENDATIONS

SIDE BIN MOUNT ARRANGEMENT

1. Typically for low or intermediate point level control
2. Shielding is recommended if heavy product surges are anticipated.
3. Material should freely flow around the paddle and shaft
4. The paddle and shaft should be protected or offset from the direct flow of bulk materials during fill cycles.

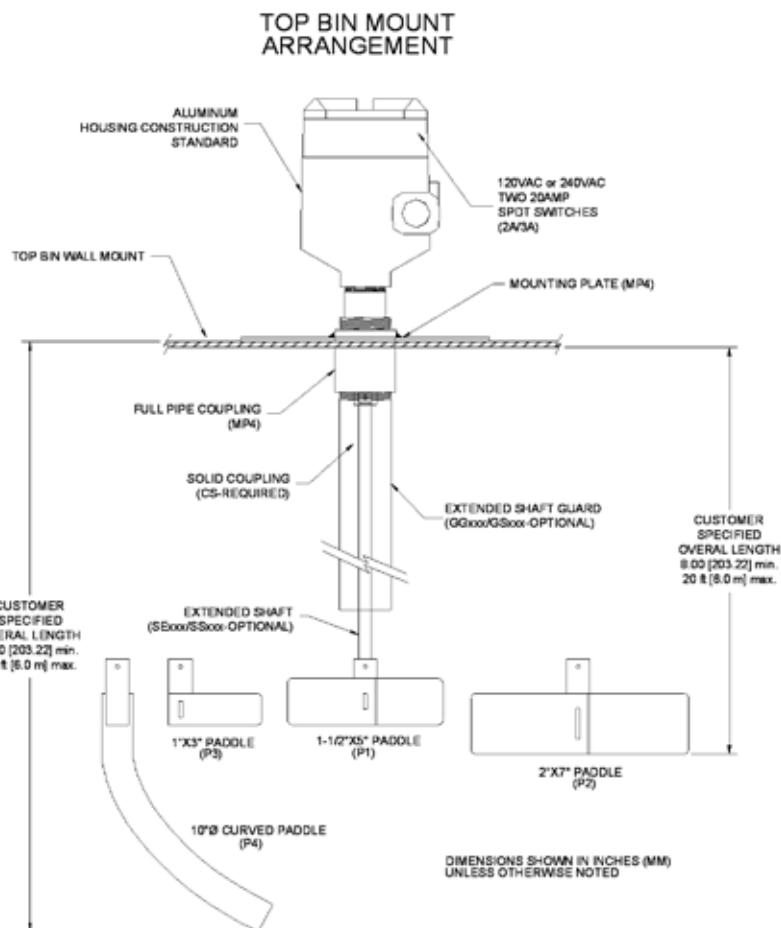


SIDE BIN MOUNT ARRANGEMENT






TOP BIN MOUNT ARRANGEMENT

1. Typically for high point level control.
2. Shaft length can be extended in the field as required by the application. Guards are recommended on shaft extensions over 1 ft. / .3 m. The guard may need to be braced when over 2 ft. / .7 m.
3. Top mounting provides ease of installation & removal, and minimizes damage from possible vibration. It also allows use of paddles recommended for larger sized materials.
4. Place unit so that it is completely covered at the products greatest angle of repose.
5. Material should freely flow around the paddle and shaft
6. The paddle and shaft should be protected or offset from the direct flow of bulk materials during fill cycles.



ORDERING INFORMATION

KP.a.b.c.d.e.f	
a	Operating Power and Switch
2A	120 VAC2 ea SPDT Switch
3A	240 VAC2 ea SPDT Switch
b	Mounting Plate
MP2	Side Bin Mount, 304 SS. Note: Uses a half pipe coupling and a short stub shaft.
MP4	Top Bin Mount, 304 SS Note: Top bin mounting plate uses a full pipe coupling for the option of an extended shaft that is protected by a screw on pipe shaft guard. See options below for extended shaft and guard ordering information.
X	No Mounting Plate
c	Shaft Couplings
X	None
CS	Solid Shaft 304 SS (required on extended units)
CF	Flexible Shaft with Neoprene Cover
d	Paddles 304SS
P1	1½ x 5" 4 Blade (25-65 lbs/ft³ 400-1040 kg/m³)
P2	2" x 7" 4 Blade (10-25 lbs/ft³ 160-400 kg/m³)
P3	1" x 3" 1 Blade (>65 lbs/ft³ 1040 kg/m³)
P4	10" Diameter Insertable Curved Blade (>25 lbs/ft³ 400 kg/m³)
e	Approvals    
X	None
FM	FM and CSA Explosion Proof
CE	ATEX Flameproof
f	Options
X	None
L2	120 VAC - Indicating Lamp (General Purpose Only)
L3	240 VAC - Indicating Lamp (General Purpose Only)

ACCESSORIES

Order Separately from KP (Recommended for Top-Bin Installations Only.) (Must have KP/CS or Solid Shaft Coupling)

- SSxxx

304 SS Shaft Extension (3/8 in.)

xxx = Specify length in inches or centimeters (240 in. / 610 cm max.)
- GSxxx

304 SS Shaft Guard (1 1/4 in. MNPT, Schedule 40 Pipe)

xxx = Specify length in inches or centimeters; length shall be 5 in./12.7 cm shorter than shaft extension length (235 in. / 597 cm max.)

REPLACEMENT PARTS

Part Number	Description
KPMOT120	120VAC, 50/60 Hz, Internal Assembly, includes: motor, 2 SPDT switches and bracket
KPMOT240	240VAC, 50/60 Hz, Internal Assembly, includes: motor, 2 SPDT switches and bracket
KP/P1	1-1/2" x 5" 4-Blade Replacement Paddle (25-65 lbs/ft ³ 400-1040 kg/m ³)
KP/P2	2" x 7" 4-Blade Replacement Paddle (10-25 lbs/ft ³ 160-400 kg/m ³)
KP/P3	1" x 3" Single-Blade Replacement Paddle (>65 lbs/ft ³ 1040 kg/m ³)
KP/P4	10" Diameter Insertable Replacement Curved Blade (>25 lbs/ft ³ 400 kg/m ³)
KP/CF	Replacement Flexible Shaft Coupling
KP/CS	Replacement Solid Shaft Coupling
KP/MP2	Replacement Side-Bin Mounting Plate w/ half Coupling with Rubber Gasket
KP/MP4	Replacement Top-Bin Mounting Plate w/ full coupling with Rubber Gasket
MPGASKET	1/8" Rubber Gasket for Mounting Plate
ELESWTLM-20-A	20 AMP SPDT Micro Switch
KPL2	120 VAC - Indicating Lamp (General Purpose Only)
KPL3	240 VAC - Indicating Lamp (General Purpose Only)

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