

# I N S T R U C T I O N - M A N U A L

## **RF-ADMITTANCE POINT LEVEL SWITCH**

### **JAYCEEADMITT – 3000 SERIES**

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#### **FUNCTION:**

The JAYCEEADMITT Point Level Switch comprises of a specially designed electronics and sensing probe using **DRIVEN SHIELD COAT GUARD** circuit and corresponding **3-Element Probe**. The Electro-mechanical combination of the **COAT GUARD** technique makes the system immune to the material build-up on the probe and material bridging between the probe and the hopper wall.

The unique feature of the system is that the measured signal does not flow to the hopper wall through the probe in the backward direction but flows only through the material (actual material level) to the hopper wall.

#### **MEASURING SYSTEM:**

The complete system, JAYCEEADMITT -3000... series, consists of: -

The sensing probe and

The Electronic Switching unit

The sensing probe consists of three sections, (1) Measuring section, (2) Coat Guard section and (3) ground section. The Coat Guard section guards the system against the transmission of RF signal through any coating on the sensing element from the measuring section to the ground. The only available path to the ground for the RF signal is through the service material in the hopper.

#### **PRIMARY AREA OF APPLICATION**

Building industry materials, cement, sand, lime, etc

Foodstuff industry, milk powder, flour, salt, foodgrains, pharmaceutical etc

Plastic industry, powder, granular etc.

Timber industry, chemical and mining etc.

#### **TECHNICAL SPECIFICATIONS:**

##### **SWITCHING UNIT:**

Housing (Standard)

Cast Aluminum, weatherproof, powder coated

suitable for back panel mounting.

<b>Cable entry</b>	<b>2 nos., 1 X PG 13.5 for the probe,</b>
<b>Ambient temperature</b>	<b>0 ° C to +60° C</b>
<b>Power consumption</b>	<b>1.9 VA</b>
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<b>Mains Voltage</b>	<b>230 V AC (+/-15%), 50 Hz / available 24v dc as per order</b>
<b>Output</b>	<b>2 sets of potential free c/o contacts rated at 5 amps, 230 V AC for non-inductive loads.</b>
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<b>Switching delay</b>	<b>Continuously adjustable from 0.5 to 20 sec. probe free or Probe covered.</b>
<b>Safety operation (FSL/FSH)</b>	<b>Field selected switch over for minimum or maximum switching points.</b>
<b>Switch status display</b>	<b>Green LED shows Normal and Red LED shows Alarm conditions. Yellow LED shows Power-on condition.</b>

**COAT GUARD SENSING PROBE:**

<b>Mounting</b>	<b>Flanged (as per specifications)</b>
<b>Sense rod</b>	<b>Stainless steel</b>
<b>Coat Guard Shield</b>	<b>Stainless steel</b>
<b>Insulation</b>	<b>full PTFE (standard) or ceramic</b>
<b>Operating temperature</b>	<b>100 ° C max. (Inside vessel)</b>

**INSTALLATION OF JAYCEEADMITT:**

Mounting of the probe would depend upon its construction and may differ from application to application. Depending upon the application, the rigid Probe can be mounted vertically, either from the top or horizontally, from the hopper side.

The Probe has a steel part at the middle of the rod, This part should not remain inside the mounting flange nozzle and should come out inside the tank.. Thus the length of the flange socket should be accordingly.

For installing the probe vertically from the top, sufficient clearance (equal to the probe length minimum) should be available above the hopper top to facilitate to hoist the probe over the tank top for insertion inside the tank.

Following precautions should be taken during installations -

The probe should not be bent or position distorted.

The shield element of the probe (standard probe) should extend into the vessel. The extended probe should be mounted in such a way that it does not extend further than necessary in the vessel.

During filling operation, the material should not fall directly onto the probe. Otherwise protection shield should be provided over the probe.

#### **SWITCHING UNIT INSTALLATION:**

For remote mounting of the Switching unit, Off the probe, the housing is suitable for back panel mounting. 20mtr cable with both ends crimped and insulated at works is supplied with the instrument.

For wiring and connection, refer the enclosed drawing. For remote unit only the supplied THREE TERMINAL connecting cables should be used for interconnecting probe with the Switching Unit.

The Switching unit should not be mounted at the location where the ambient temperature is more than 60° C.

Precaution should be taken to avoid fall of Sunrays on to the Switching Unit housing. In case it is not possible to avoid, a suitable Sun protection cover should be provided over the housing.

#### **FAIL SAFE MODE SELECTION:**

Depending upon the process requirement, the minimum or maximum fail-safe mode can be selected in the JAYCEEADMITT.

In JAYCEEADMITT the Relay is in energised condition. When level changes state the relay de-energises. Thus, besides level alarm condition, the operator gets an alarm even in case of mains failure or the instrument failure. This imparts a better overall reliability of operation.

Maximum fail safe mode means the relay de-energises when the level exceeds the desired or when mains supply fails.

Minimum fail safe mode means the relay de-energises when the level drops below the desired level or when mains supply fails.

**NOTE:** The contacts shown in the connection drawing are for Fail Safe Hi condition. The contacts will reverse when the FS Link is changed to Low position.

#### **ELECTRICAL CONNECTION TO JAYCEEADMITT:**

Please refer the connection diagram for the electrical connection. Appropriate mains voltage should be connected to the terminals of the instruments as specified. The connectors are suitable for 1.5 sq.mm cable cross section.

## **SET POINT SWITCHING CALIBRATION**

There is single adjustment in the Switching Unit and is accessible from the top. There are three LEDs on top of the Switching Unit. The Yellow LED indicates Power ON condition. The Green LED indicates the relay is in the energised state. The red LED indicates the alarm condition and relay in de-energised state. The setpoint adjustment is done by multiturn variable capacitor.

**(Please do not stress the capacitor)**

Select the Fail Same mode and keep the time delay pot at minimum.

Turning the capacitor clockwise will raise the level at which the relay operates and turning the capacitor counterclockwise will lower the level at which relay operates.

Please use insulated tool provided with the capacitance adjustor. Do not turn the capacitor beyond its limits as it would damage the same.

Tank should be empty or the level should be more than 300 mm below the probe.

For Fail Safe High condition, turn the capacitor in the full counter-clockwise position. Using the insulated tool and turn the capacitor adjustment slowly to clockwise until the relay just operates and green LED glows. Repeat the operation once or twice and note the point of switching.

Rotate the adjuster further **CLOCKWISE** by a 2 turn for vertical mounting and / One Full turn for horizontal probe mounting. (Do not turn the adjuster counterclockwise now) The instrument is set for desired switching point.

Please see if it is possible to look into the tank that the relay and LED changes state only when the liquid touches the probe. In case the relay changes state even when the liquid does touches the probe the instrument is still in very sensitive state and the adjustment screw should be further rotated by one or two clock wise turn as per requirement.

Adjust the time delay pots, as per your requirement. This is for avoiding the switching during rolling and pitching motion of the vessel.

For Fail Safe Low application, put the FSS link into the low position and repeat the same procedure as in case of high. In this case when the probe is free of liquid **RED LED** will glow and when dipped in liquid **Green LED** will glow.

## **MAINTENANCE**

In normal conditions the JAYCEEADMITT need no maintenance.

However, if the material has built up tendency, over a period of time, probe should be cleaned whenever need occurs.

Ensure that the cable glands and the housing lid are sealed to prevent ingress of moisture.

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