

SRP Series Rotary Paddle Point Level Sensor

Operation Manual

Operating Principle

The SRP rotary paddle point level sensor is used to detect the presence / absence of materials within bins, hoppers, silos and other types of vessels. A robust synchronous motor drives a stainless steel shaft at approximately 1 RPM. The paddle attached to the shaft rotates freely in the absence of the material. When material comes in contact with the rotating paddle and impedes its rotation the state of relay contacts or microswitches will change, removing power to the drive motor and indicating material presence. When the material is removed from impeding paddle rotation motor power is restored and the paddle returns to rotating freely and the relay or microswitches revert to their previous state.

Specification

| | |
|-------------------|--|
| Ambient temp. | -40°F to +176°F (-40°C to +80°C) |
| Storage temp. | -40°F to +176°F (-40°C to +80°C) |
| Process temp. | Standard: -40°F to +176°F (-40°C to +80°C) High temp. type: -40°F to +392°F (-40°C to +200°C) |
| Relative humidity | 20%~80% RH non-condensed |
| Pressure | 58psi (4 bar) |
| Housing material | Diecast Aluminum (powder coated) |
| Protection | NEMA 4X / IP65 |
| Connection | 1-1/4"NPT |
| Conduit entrance | Two 3/4"NPT |
| Paddle speed | 1/1.2 RPM |
| Supply voltage | Universal 20-250VAC/VDC, 50/60Hz; 110VAC, 50/60Hz; 220VAC, 50/60Hz |
| Output rating | ONE Relay: 5A @ 240VAC/28VDC (Option: TWO Relays)* ONE NPN/PNP: 400mA @ 60VAC/VDC (Option: TWO NPN/PNP)* ONE Microswitch: 6A @ 250VAC (Option: TWO Microswitches)† |
| Power consumption | Max. : 15VA |
| Fail safe mode | FSH/FSL Switch* |
| Delay time | Adjustable 0-12S* or Fixed |
| Bulk density | > 18.7lbs/ft ³ ** |
| Remote test | Jumper RT1/RT2 for Test* |
| LED Indication | Green = Normal / Red = Alarm* |

*Provided only with Universal 20-250VAC/VDC Power Supply

**Dependent on paddle selection and sensitivity spring position

† Provided only with 110VAC or 220VAC Power Supply

Sensitivity Adjustment

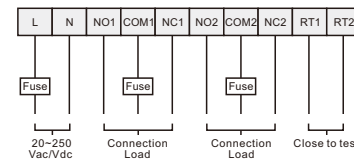
- The sensitivity spring needs to be set appropriately and is to be set according to the bulk density of the material to be sensed. The spring position marked as Strongest is recommended for very heavy materials and represents the lowest possible sensitivity setting for the SRP unit. On the contrary the spring position marked as Weakest is recommended for very light or low bulk density materials and represents the highest degree of sensitivity for the SRP. The sensitivity spring position and paddle selection work together to determine the effective sensitivity of the SRP unit.
- Adjustment method: Remove the cover of the SRP rotary paddle point level sensor to have easy access to the sensitivity spring for adjustment. If adjustment is desired carefully disconnect the sensitivity spring from its current location in the adjustment bar (Weakest, Weak, Strong and Strongest) and reposition/reattach it to desired position in the adjustment bar. Note that the factory default position is Weakest. This should suit a large number of applications.
- Do not attempt to replace sensitivity spring at random. If needed please order replacement spring from APLUS FINETEK SENSOR, INC.

Installation

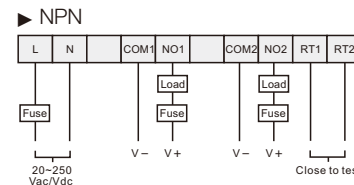
- NEVER open cover before disconnecting power.
- Be aware of internal bin temperatures, ambient air temperatures and ensure installation will be within the SRP unit specifications.
- Do not install the SRP unit where it will be in the direct flow of incoming material.
- Install a protective baffle above the SRP inside the bin if it might be impacted by falling heavy material.
- The SRP motor has a warm-up time of 30 minutes @ -22°F (-30°C). If immediate response is required for harsh low ambient temperature operation please contact Aplus Finetek Sensor.
- For side mount installations the SRP should be positioned at a 20° downward direction if possible. This ideal orientation will help shed falling material.
- Keep corrosive vapors away from powder coated diecast aluminum housing.
- Install the SRP with conduit entrances pointing down and tight, NEVER in an upward direction, so as to eliminate the possibility of moisture ingress into enclosure from the conduit system or falling rain.

Wiring

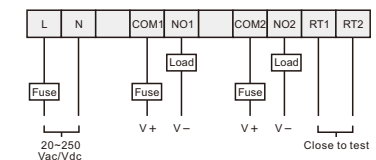
■ 20-250VAC/VDC with Relay Output



■ 20-250VAC/VDC with NPN/PNP Output

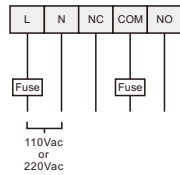


► PNP

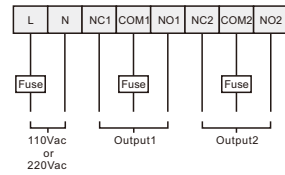


■ 110VAC or 220VAC w/ Microswitch Output

► One Microswitch



► Two Microswitch



Maintenance

1. Periodic inspection to ensure proper operation and that the shaft and paddle are not damaged.
2. Ensure the paddle is firmly attached to the SRP shaft using the provided slotted pin.
3. Periodically remove material build-up from paddle and shaft if any exists.

Trouble Shooting

| Problem | Possible Cause | Solution |
|---|--|---|
| The paddle and shaft rotate but there is no signal output | <ol style="list-style-type: none"> 1. Fail-safe switch / wiring not correct 2. Paddle selected not correct based on material density, particle size and flow characteristics 3. Sensitivity spring not properly set 4. Failed relay or microswitch | <p>Check operation by hand or using remote test feature if so equipped to ensure output contacts are changing state. Replace Electronic module if not operating properly.</p> <p>Review material density, particle size, flow properties and sensitivity spring setting and adjust as needed.</p> |
| Paddle or SRP shaft are damaged | <ol style="list-style-type: none"> 1. Review installation location to ensure material flow is NOT impacting on the paddle/shaft. 2. Review material bulk density and particle size | <p>Install baffle above unit to protect from falling material, repair unit or replace.</p> <p>Relocate to eliminate problem and repair or replace unit.</p> |