Sludge Finder 2
Engineering Specifications

General

The Sludge Finder 2 is an effective sludge blanket monitoring sonar measurement system with the capability to measure 2 points of sludge level. Standard features include 2 x 4-20mA outputs, 6 SPDT relays, keypad, and graphical display. The device can monitor SBR tanks, primary or secondary settlement tanks and industrial tanks down to 0.5% density. It is available in a wall mount enclosure.

The controller provides 24 VDC to the transducer, which is transformed into a 3,000 volt peak-to-peak ultrasonic pulse and focused within a 6° Beam Angle to the monitored surface. The return echo is then converted into a digital current signal (*for eliminating electrical noise*) and returned back to the controller for DATEM signal processing. A 4-20mA output is provided proportional to the level being monitored.

Ultrasonic measurement device – Separate Transducer and Controller requirements

1. General

- **a.** The sonar sludge blanket analyzing measurement system is to have the capability to measure two points of measurement level, and control up to 6 pumps.
- **b.** The system must have a separate controller and sonar transducer with a maximum separation of 656 feet (200m).
- **c.** The ability to use air ultrasonic transducers on the spare channel as a standard option.
- **d.** A PC software program shall be available to allow viewing and recording raw echoes, auto masking interpretation, and programming.
- **e.** The manufacturer shall warrant the equipment described herein, to be free of defects in materials and workmanship, for a period of twenty-four (24) months from the date of shipment from the supplier.

2. Controller Specification

- **a.** Input Power: 115V AC +5%/-10% 50/60 Hz, 22 - 28V DC.
- **b.** Relay Outputs: 6 Form “C” (SPDT) relays rated 5A at 115V AC.
- **c.** mA Outputs: 2 x 4-20mA configurable as level, volume, distance, space, differential, average, upstream level, or downstream level..
- **d.** Communication: Provide an optional RS-485 Modbus and Profibus DPV0 / DPV1.
- **e.** Certification: cULus certification.
- **f.** Display: 192 x 128 pixel illuminated graphical display.
- **g.** LED Indicators: Multi-color LED’s: Yellow= Normal, Green= Control On, Red= Alarm On
- **h.** Electronics Temp: -4°F to +122°F (-20°C to +50°C)
- **i.** Enclosure (HxWxD): 7.2” x 9.3” x 4.7”: (184mm x 235mm x 120mm), 2.2 lbs (1.0 kg)
- **j.** Enclosure Rating: NEMA 4X (IP65).
- **k.** Programming: Integral keypad and PC software. .
- **l.** The programming of the controller shall be an “Easy Prompt” menu-driven system for quick start-up calibration.
- **m.** The controller shall provide 24V DC to the transducer, which is transformed into a 3,000 volt peak-to-peak.

3. Application Specific Performance

a. Sludge Blanket Level:

i. Accuracy: 0.25% of measured range or 0.4 inches (10mm), whichever is greater.

ii. Resolution: 0.25% of measured range or 0.4 inches (10mm), whichever is greater.

4. Signal Processing

a. Digital echo processing.

b. The controller shall use signal processing to select and verify the true echo using algorithms for the following applications:

i. Primary Tank.

ii. Secondary Tank

iii. Sequence Batch Reactor (SBR)

iv. Industrial

5. Transducer Specification

a. Range: 11.8 inches to 32.8 ft (300mm to 10m)

b. Transducer Temp: -4°F to +158°F (-20 to +70°C)

c. Beam Angle: The sonar pulse will produce a focused 6° Beam Angle to the monitored surface.

d. Enclosure Rating: NEMA 6P (IP68).

e. Enclosure Material: Valox 357.

f. Return Echo: A digital current signal (*for eliminating electrical noise*) and returned back to the controller for signal processing.

g. Wiper Blade: Auto wiper blade with fully adjustable interval timer. Stainless steel construction.

h. Splicing with two twisted shielded pairs will not affect the system performance.

i. The ultrasonic pulse will produce a focused 6° Effective Beam Angle to the monitored surface.

j. The return echo is to be converted into a digital current signal (*for eliminating electrical noise*) and returned back to the controller for signal processing.

6. Manufacturer

a. The continuous ultrasonic level system shall be a Pulsar Measurement Sludge Finder 2 Controller with a VT10 transducer (sensor), or an engineer approved equal.