

InterRanger DPS 300

Ultrasonic Interface Level Detection System

Part 1. General

1.1 Scope

- A.** This section describes the requirements for an ultrasonic interface level detector with transceiver and transducer sensors.
- B.** Under this item, the contractor shall furnish and install the interface level measurement system as indicated on the plans and as herein specified.

1.2 Submittals

- A.** The following information shall be included in the submittal for this section:
 - 1. Data sheets and catalog literature for microprocessor transceiver electronics and ultrasonic transducers.
 - 2. Interconnection and dimensional drawings.

Part 2. Products

2.1 Ultrasonic Interface Level Detector

- A.** The controller shall provide two independent 4-20 maDC output signals proportional to interface level in either one or two clarifiers into a maximum of 750 ohms.
- B.** The controller shall provide optional RS-232C and/or RS-422 communication over a bi-polar 20 ma current loop with the use of a buffered interface converter.
- C.** The controller shall provide optional two-way infrared adapter and software to facilitate programming and troubleshooting.
- D.** The controller shall be capable of interface level in either one or two clarifiers.

- E.** The output signals shall be proportional to interface level 0 to 100% for an optimum accuracy of +/- 1.0% of range or 0.8", whichever is greater.
- F.** The resolution shall be 0.08".
- G.** Programming shall be accomplished via a removable, infrared programmer without the need to open the enclosure for programming thus maintaining the Nema 4 integrity of the enclosure. There shall be no internal potentiometers or switches used in programming the controller.
- H.** The indicator display shall be a graphic 2" x 5" LCD for measurement readings and operational status. Features include two four-digit numeric displays with floating decimal point, level bar graph, alarm status, point being scanned, data communication indication, filling/emptying indication, temperature and rate of change. Display shall be backlit.
- I.** The controller shall have an EEPROM memory and shall not require a battery to ensure protection of entered parameters and operational data.
- J.** Automatic temperature compensation shall be accomplished through internally mounted temperature sensors located in the ultrasonic transducers.
- N.** Communications Protocol
 - a. Shall be compatible to accept two-way infrared / RS232 communications for parameter input and data acquisition. Software will be capable of downloading, storing and uploading data. Communications module shall be portable.
 - b. Shall be capable of communicating via Allen-Bradley Remote I/O or Profibus interface software.
- O.** Transmitter shall process all echoes from stored memory which is continually updated after echo enhancement.

- P. The patented Sonic Intelligence shall compare the various returns and select the echo with the greatest confidence factor.
- Q. Four (4) programmable alarm relays.
- R. Range of 1 to 100 feet.
- S. The equipment shall be the Milltronics model InterRanger DPS 300 with XCT-12 Transducer.

2.2 Ultrasonic Transducers

- A. The ultrasonic transducer (s) shall be permanently mounted at the measuring point and shall be installed according to the manufacturer's recommendations.
- B. The transducers shall function over the following temperatures:

<u>Transducer</u>	<u>Temperature</u>
XCT	-40° to 293° F

Part 3. Operator Functions

3.1 Calibration

- A. Calibration of the dual-point controller shall be accomplished by the entry of all operating data through the removable keypad via infrared link. No additional equipment shall be required.
- B. Internal self diagnostics shall be available to assist in maintenance of the dual-point controller.

Part 4. Execution

4.1 Installation

- A. Follow manufacturers recommendations for the minimum separation between the sensor and the maximum expected interface level.
- B. Mount the sensor just be liquid level to ensure a clear path to the interface level.

- C. Optional transducer mounting brackets will be available for special applications.
- D. Wiring between the transceiver and the ultrasonic transducer shall be routed in grounded metal conduit with no power lines located in the same conduit.
- E. Splices of additional cable should be soldered or connected via a terminal block.

Part 5. Warranty

5.1 Terms

- A. The manufacturer of the above specified equipment shall guarantee for twenty four (24) months from equipment startup or thirty (30) months from date of shipment, whichever occurs first, that the equipment shall be free from defects in design, workmanship or materials.
- B. In the event a component fails to perform as specified or is proven defective in service during the warranty period, the manufacturer shall promptly repair or replace the defective part at no cost to the owner.

Part 6. Options

6.1 Related Equipment

- A. Mounting Packages
 - 1. Base Plate and Rail Mount Brackets
 - 2. Mounting Plate with extension arms
 - 3. Skimmer Guard with Knuckle Plate
- B. TS-3 Temperature Sensors

Part 7. Spare Parts

7.1 Recommended Spare Parts

- A. Programmer