440-1300-51		Sht. 1 of 1	APP'D BY JRB
ISSUE	EDO NO.	APP'D	DATE
1	8-99-249	JRB	11-15-99
2	2-00-255	WS	2/22/00

Bid Specification for Loop Powered HART® Continuous Ultrasonic Transmitter

The continuous level transmitter shall employ an ultrasonic level measuring principle. It shall control an isolated 4-20 mAdc output proportional to level with a loop resistance of up to 550 ohms. Temperature compensation shall be incorporated within the ultrasonic level measuring transducer. The transducer must be capable of being mounted in a 2 inch diameter nozzle and be recessed at least 12" (305 mm) inside the nozzle which shall permit the transmitter to measure to the top of the vessel. The transducer must be capable of either integral mounting directly to the electronic unit or optionally mounted remotely up to 75 feet (23 meters) from the electronic unit. When remotely mounted, the manufacturer shall supply all cables and weatherproof fittings required to interconnect the transducer to the electronic unit. The standard enclosure shall be a rugged, copper-free cast aluminum housing and shall meet the requirements of explosion-proof ratings and NEMA 4X (IP-65) for corrosion resistant service. Power input will be nominal 24 VDC.

Calibration shall be accomplished through a HART Model 275 Communicator or PC software with a modem connected anywhere in the 2-wire loop. Calibration can also be accomplished without power through direct setting decade switches (in inches or centimeters) for both zero and span settings. All calibration and configuration shall be accomplished with or without material present in the vessel. The transmitter shall be capable of being calibrated and configured either connected to the vessel or "on the bench". The direct calibration settings shall have a resolution of the nearest 1 inch (1 cm in metric) or better. The maximum range shall be at least 30 feet (9 meters) with a near zone limit of 12 inches (305 mm) or less. Recommended minimum span capability shall be 3 inches (76 mm) or 10% of the maximum range (whichever is greater). The output shall be capable of being configured for either height or distance. Accuracy of the transmitter shall be 0.2% of range or better with resolution and repeatability of 0.1 inch (3 mm) or better.

The transducer shall be of CPVC construction (or other material as required) with a 2 inch NPT mounting thread or optional flange mount. The recommended operating temperature range for the transducer shall be from -40° to +200°F (-40° to 90°C). The electronic unit shall employ a 50 kHz operating frequency.

The transmitter shall automatically and continuously process the signal to ignore false echoes from internal tank obstructions such as ladders, pipes, heating coils, or agitator blades.

The transmitter shall indicate near zone violation or lost echo faults by driving high (22mA) or low (3.5mA) field selectable by the operator. The transmitter shall incorporate adjustable damping circuitry allowing for 0, 15, or 45 second signal damping.

Transmitter will allow for 21 point strapping table to handle volumetric conversion of non-standard vessels, spheres, horizontal cylinders, and open channel flow.

The transmitter shall be capable of tracking material change at a rate of 10 inches per second.

The manufacturer shall have worldwide technical support and installation assistance capabilities.

The transmitter shall be model 505-2400 Series Ultrasonic Level Transmitter as manufactured by Drexelbrook Engineering Company or engineer approved equal.

HART® is a registered trade name of the HART Foundation.