



"USLS" Ultrasonic Level Sensor Operations & Maintenance Manual



**Record Your Model, Serial Number and
Other Information on the back of this document.**

Manufacturing: Bypass & Filter Feeders, Glycol Feed Packages, Separators & Separator Systems, Tanks, Tank Stands, Chemical Batch Mixers, Corrosion Coupon Racks, Packaged Feed Systems and Custom Systems

P.O. Box 8697, Brea, CA 92822-5697 ♦ Phone: 714) 257-9165
113 Viking Ave., Brea, CA 92821 ♦ Fax: 714) 257-9215
www.gtpcompany.com ♦ customerservice@gtpcompany.com

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O&M Manual INSTUSLS Rev. 0220, Page 1 of 3

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***** WARNING – BEFORE YOU GET STARTED *****

- 1) All fasteners & fittings should be inspected and secured before operation as they may be loosened in transit
- 2) Personnel safety practices should always apply
- 3) Safety glasses or face shields and gloves should be worn
- 4) Do not service without disconnecting power
- 5) Close isolation valve and release pressure before servicing any components on the system
- 6) All liquids in system should be drained before servicing

1.0 INTRODUCTION Thank you for choosing General Treatment Products Ultrasonic Level Sensors. These innovative and cost-effective level transmitters are the perfect choice of industry to monitor critical fluid levels.

2.0 WARRANTY General Treatment Products "USLS" Ultrasonic Level Sensors are guaranteed for one year from date of shipment against manufacturing defects in material and workmanship that develop in the service for which they are designed. We will repair or replace a defective part of this system when returned to our factory with freight prepaid; providing that the part is found to be defective upon inspection. We assume no liability for labor and/or other expenses in making repairs or adjustments.

3.0 UNPACKING Upon receipt of order, inspect package thoroughly. In the event there was damage incurred in transit you must notify the freight company within **3-5 days of receipt of order**. Once valve is inspected for damage and received in good condition, and store indoors until installing.

3.1 ORDER VERIFICATION

MODEL		SENSOR RANGE	
USLS	3001	3001	49.2" range
		3002	78.7" range
		3003	118.0" range
BASE MODEL		USLS	Ultrasonic Level Sensors, 4-20mA, 2 wire loop

4.0 LOCATION/ENVIRONMENT Although the sensor enclosure is NEMA rated, sensor, mounting hardware and power cord should not be exposed to direct elements. In most cases, there will not be a dry indoor location that is convenient to install the sensor. Some shelter, awning or shed needs to be installed to validate warranty.

5.0 INSTALLATION/OPERATION Level Sensor Installation Tips:

- 1) Install the sensor straight up and down
 - 2) Make sure there is minimal turbulence inside the tank from pumps and mixers
 - 3) That sensor beam (23°) does not hit side wall of tank for the range of the level
- Once a location has been decided on, drill a 2-5/8" hole in tank. Feed the sensor through and screw on lock nut from inside tank.

5.1 CALBRATION: USLS sensors transmit a 4-20 signal based on the maximum length of the beam. Meaning 4mA is the upper point (less the dead zone 2.36") and 20mA is the maximum beam length (3001 = 49.6", 3002 = 78.7" and 3003 = 118.0"). To calculate the 20mA value, you need to figure how many gallons per inch is your tank and multiply the gallons per inch by the extra length the beam is compared to your tank geometry.

Example: Tank capacity is 35 gallons, Tank full is 18". Capacity per gallon is 1.94 gallons per inch. Using a USLS-3001 with a maximum beam length of 49.6" the 20mA mark is -61.69 gallons and the 4mA value is the max volume of 35.

Equation:

$$\begin{aligned}
 (\text{max volume divided by volume height}) &= \text{gallons per inch} & (35/18) &= 1.94 \\
 (\text{beam length minus max tank height}) &= \text{over beam length} & (49.8-18) &= 31.8 \\
 (\text{over length times gallons per inch}) &= \text{20mA value as a negative} & (31.8*1.94) &= -61.69 \\
 \text{Setting are 4mA} &= \mathbf{35} \text{ and } \mathbf{20mA} &= \mathbf{-61.69}
 \end{aligned}$$

Settings for GTP DW Tanks:

Tank Model	Tank Height	Sensor Model	Beam Length	4mA	20mA
DW18	21.5"	USLS-3001	49.8"	18	-23.69
DW35	28.75"	USLS-3001	49.8"	35	-25.63
DW65	39.5"	USLS-3001	49.8"	65	-16.95
DW120	50"	USLS-3001	78.7"	120	-3.23
DW160	61.5"	USLS-3002	78.7"	160	-44.75
DW220	56"	USLS-3002	78.7"	220	-89.18

Settings for GTP DW Tanks:

Tank Model	Tank Height	Sensor Model	Beam Length	4mA	20mA
DWE15	26.5"	USLS-3001	49.8"	15	-13.19
DWE35	34.5"	USLS-3001	49.8"	35	-15.52
DWE60	30.25"	USLS-3001	49.8"	60	-38.78
DWE110	61.25"	USLS-3002	78.7"	110	-22.67
DWE165	81.25"	USLS-3003	118"	165	-74.63

Note: Spanning or calibrating your sensor is typically dependent on the monitor/controller. See instructions for details on your monitor/controller. Most monitor/controllers have a 2 point calibration. This will be the most accurate. When this is not available, contact the factory for help.

6.0 PRESSURE AND TEMPERATURE LIMITATIONS USLS Sensors maximum operating perimeters are 0PSI @ 100F. Some optional fittings, as noted in descriptions, may change limitations.

7.0 ROUTINE MAINTENANCE Routine maintenance in this section is referred to as checking a sensor once a month until a maintenance schedule can be determined. **All fasteners should be check for proper operations.** Maintenance and care will depend upon the usage.

8.0 PARTS LISTING Contact factory for further information.

9.0 WIRING USLS sensors are 12-24VDC, 2 wire loop powered sensor. The red wire is the positive and the black wire is the negative. See your controller/monitor for further details.

10.0 TROUBLE SHOOTING If you are having trouble, please visit www.gtpcompany.com or contact customer service.

11.0 PRODUCT LABEL

Model:

Serial Number:
